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# FAITH AND THOUGHT

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GENERAL EDITOR: Dr. A. B. Robins



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# Editorial

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Although the last Editorial, that of volume 113, 2, drew attention to the presence of a large number of book reviews, in the event many of these were not included due to lack of space. This accounts for the considerable number in this issue, both the back-log, and more recent reviews. We are now up-to-date as far as we can be in this respect. It is fortuitous that the large number of such reviews has coincided with a dearth of original papers. It is hoped that this will be only a temporary shortage. Both of the papers in this issue deal with the same topic:- the science-religion debate. They place the origin of the scientific method firmly in the orthodox Christian camp rather than that of the liberal theologian.

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# Our Contributors

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**John Nicholson** *The Role of Reason in Science and Christianity* is a Senior Scientific Officer at the Laboratory of the Government Chemist.

**Enrico Cantore** *The Christic Origination of Science* is a philosopher trained in physics, and Jesuit priest.

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John Nicholson

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## The Role of Reason in Science and Christianity

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### Introduction

One of the most deeply ingrained ideas about science and Christianity is that they are fundamentally in conflict.<sup>1</sup> The fact that this view was carefully cultivated by such prominent Victorian agnostics as T. H. Huxley, and propagated in works such as Andrew White's 'History of the Warfare of Science with Theology' (1896), now regarded as of little or no scholarly value within the circles of professional science historians, is beyond dispute.<sup>1,2</sup>

Unfortunately, this view has not yet escaped from the confines of expert opinion to become a commonplace amongst the wider population. As a result, there still appears to be an axiomatic assumption in the post-Christian western world that, at root, science and Christianity are antagonistic, with irreconcilable differences in the respective patterns of thought of their practitioners. Science is seen to be a splendidly rational activity, a little cold, perhaps, but none the worse for that, prosecuted by hard-headed souls (usually male), who have no room for extraneous inessentials, like emotion. Christianity, by contrast, is considered to be the last refuge of the poorly educated, the emotionally unbalanced, and the plainly irrational; indeed of all who (to quote from the apocryphal schoolboy definition of 'faith') are capable of believing those things that they know to be untrue. This is, of course, a caricature. Even secular historians<sup>3</sup> concede that in the development of the various creeds, as well as in the management of its material possessions, the Church has long had a powerful tradition of rational thought.

Nevertheless, science is seen as 'more rational' than Christianity. It is the purpose of this paper to examine what lies behind this

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1. C. A. Russell, *Cross-currents: Interactions between science and faith*, p. 193, Inter-Varsity Press, Leicester (1985).

2. For discussion on this work, see R. E. D. Clark, *Faith and Thought*, 98, 43:53 (reproduced in *ibid*, 112(2), [1986], 167-75).

3. See for example David S. Landes *The Unbound Prometheus*, Cambridge University Press, (1969).

perception, and to explore in detail the role of rationality in both spheres of human activity. To do this, I shall first consider the abstractions that we conventionally label respectively 'science' and 'Christianity', and, for each in turn, shall describe the role that reason has to play.

### The nature of science

Discussion continues about the exact nature of science, and the way it may be distinguished from other fields of intellectual endeavour. In the past, philosophers have seen science as so logically flawed that they have ceased to trust in it at all. David Hume, the eighteenth century philosopher, certainly followed this line: setting out to cast doubt on the rationality of orthodox Christian 'natural theology', he ended up declaring science itself to be irrational.<sup>4</sup> Hume's theological scepticism led him into scientific scepticism, a fact which acts a '... stern reminder of the close harmony between science and belief...'<sup>5</sup> at least amongst those who are both scientists and Christians. On the other hand, philosophical reflection has been denigrated by scientists, who see little relevance to their own work. Indeed, the organic chemist, Dr. A. R. Butler, has remarked, '... the philosophy of science (is) *properly* ignored by those who practise the subject.'<sup>6</sup> (my emphasis).

Nevertheless, there are useful models of the scientific process. The one that I propose to use as my guide was set out by Professor W. I. B. Beveridge.<sup>7</sup> He is a practising scientist with some feel for the philosophical problems involved, and he sums up the process of science as follows:

- (a) recognition and formulation of the problem,
- (b) collection of relevant data,
- (c) arriving at a hypothesis by induction, indicating causal relations or significant patterns in the data,
- (d) making deductions from the hypothesis and testing the correctness of these by experimentation or collection of more data,

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4. C. A. Russell, *Cross-currents*, p. 119.

5. J. H. Brooke, *Natural Theology in Britain from Boyle to Paley*, Units 9–10 of Open University Course AMST 283 'Science and Belief: from Copernicus to Darwin', Open University Press, Milton Keynes, p. 45 (1974).

6. A. R. Butler reviewing P. B. Medawar's 'Advice to a Young Scientist', *Chemistry in Britain*, 16 (1980), 571.

7. W. I. B. Beveridge, *Seeds of Discovery*, Heinemann Educational Books, London (1980).

- (e) reasoning that if the results are consistent with the deduction, the hypothesis is strengthened, but not proved.

As he points out, there are difficulties with this attractively simple framework; in particular with item (b). In reality, it may be extremely hard to know exactly what data are relevant. Consider the following artificially bland hypothesis: 'All swans are white.' The discovery of a black boot would not readily be admitted as additional data relevant to the testing of the original hypothesis. Yet, as Medawar has pointed out,<sup>8</sup> such a discovery does have some bearing on the hypothesis, since the boot is both non-white and non-swan. It can therefore be held to make a small contribution to strengthening the original hypothesis. I shall consider the question of what exactly constitutes relevant data, especially within Christianity, later on.

Another feature of this framework is that it is not wholly in accord with the philosophy of Karl Popper, which is so widely held to be the best description of the procedures of science. Indeed Popper has been described by Medawar, a Nobel Prize-winning scientist, as 'incomparably the greatest philosopher of science that there has ever been.' Yet, despite this, the central concept of Popperism, that of falsification as the key to scientific progress,<sup>9</sup> has been disputed by practitioners.<sup>2</sup> Firstly, it is often difficult to design the crucial experiment that will give an unambiguous yes or no to a question, and thereby consign a given hypothesis to the dustbin. Secondly, as item (e) in the list states, there is an intuitive feeling in the heart of every scientist (indeed of every human being) that repeated non-falsifications actually do lead to a strengthening of the hypothesis. If every swan that I see in my life is white, I am likely to find myself believing with increasing confidence that indeed all swans are white. The fact that I would be wrong only underlines the problems with this approach. Nonetheless, it is the one that appears to be adopted by working scientists. For example, Alfred Werner (1866–1919), the great inorganic chemist, consciously or unconsciously subscribed to this viewpoint, in writing '... I have experienced the purest pleasures in the laboratory, when on the basis of reflections I arrived at new

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8. P. B. Medawar, 'The Limits of Science', Oxford University Press (1985).

9. This idea, which is well known among scientists, can be summed up as follows: only concepts which are, in principle, capable of being proved false are scientific. The role of experiments is to try to falsify particular hypotheses. If they do not succeed, that simply gives the hypothesis a temporary reprieve. Non-falsification does not and cannot 'strengthen' the hypothesis. This means that most of what we claim to know about the world is will o'the wisp, not actually 'true', but merely convenient hypothesis. In reality, most practising scientists do not behave as though they believe this, however much they may claim to be 'Popperists'.

conclusions *which could be confirmed experimentally*<sup>10</sup> (my emphasis). Notice this phrase: contrary to Popper, Werner at least (and many others of lesser stature after him) believed that experiments were capable in principle of confirming hypotheses ('conclusions') and not merely of falsifying them. And this approach is widely adopted in practice by scientists: if a theory makes a prediction that is capable of experimental verification, that verification is viewed as strengthening the hypothesis. The outstanding example of this reasoning is the often quoted example of Einstein's special theory of relativity. Although it gives a view of the world that appears bizarre to our senses, conditioned as they are by everyday experience, it has been held to be 'verified' on the strength of predictions made about perturbations in the orbit of the planet Mercury around the sun, predictions which have subsequently been observed.<sup>7</sup>

Even if the approach lacks logical rigour, it has to be pointed out that science as an enterprise has been remarkably successful. It has given us an understanding of the way the physical world works, as well as an unprecedented control over that world. It is therefore hard to escape Polkinghorne's conclusion that '... the natural convincing explanation of the success of science is that it is gaining a tightening grip of an actual reality'.<sup>12</sup> So where does this leave us in our search for a model of science? In fact we are left with a cyclic process in which data collection, including experimentation, is followed by hypothesis formulation, and hypothesis formulation in turn is followed by further data collection. Modification of the hypothesis is made if the data demand it; otherwise it is left unchanged. In the latter circumstance, *contra* Popper, the hypothesis would also be regarded as stronger, more secure and more likely to be 'true' than before the second set of data collection.

And what is the role of reason in all this? Well, it is manifestly clear that the development of a hypothesis requires 'reason', at least to frame the next question and plan the collection of the next set of data. In terms of Beveridge's model of the scientific process, reason enters no earlier than item (c), and possibly not even then, since many a hypothesis is known to have been hit upon 'intuitively' in such a way that even the originator has been unable to account for the idea. At best, we cannot guarantee that 'scientific' reasoning will be exercised

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10. G. B. Kauffman, *Inorganic Coordination Compounds*, Heyden & Son Ltd, London (1981).

11. J. Thewlis (Editor-in-chief), *Encyclopaedic Dictionary of Physics*, vol 6, p. 264., Pergamon Press, Oxford (1962).

12. J. Polkinghorne, *One World: The Interaction of Science and Theology*, SPCK, London (1986).

before item (d) in the list. And when it does so, its role is simply that of working upon the initial set of data obtained. As scientists, we are led, not by reason but by data, and we must not reject the data that do not fit the theory; that is not only against the rules, but actually militates against scientific progress. We include it all, and try to reason from it.

We should note in passing that for this scientific enterprise to be effective, in principle it is necessary for the observers to be entirely free from prejudice in their search for data. However as a study of the history of science will reveal, the idea of disinterested observers gathering facts, followed by dispassionate formulating of hypotheses, is a myth.<sup>13</sup> Nevertheless, the process takes place in some sense as described, even if the scientists involved in it are not truly disinterested, but are actually motivated by some unscientific desire, such as for personal glory or malice for an opponent, and are in practice trying to strengthen their own hypothesis or discredit that of a rival.

To sum at this point, then, it is data that are pre-eminent in science. The role of reason is to act upon them, and in that sense, reason is subservient.

### Authority and Reason in Christianity

Essentially, the deepest divisions within Christianity come at the point of authority. Whilst churchmen of all persuasions (Catholic, Biblical Protestant and Liberal Protestant<sup>14</sup>) would agree that their ultimate authority is God, there are practical difficulties with this, in particular in knowing by which means He communicates most clearly. Traditionally the three groups have answered differently, with claims that in the Church, in the Bible or in human reason respectively, is to be found the most reliable 'secondary standard'<sup>15</sup> of God's purposes and demands.

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13. D. M. Knight, in C. A. Russell, *Recent Developments in the History of Chemistry*, Royal Society of Chemistry, London (1985).

14. These divisions are somewhat arbitrary and oversimplified. Very often, theological liberals say essentially the same thing, regardless of whether they are formally Protestants or Catholics. On this point, see Francis M. Schaffer, *The Church at the End of the Twentieth Century*, p. 153, The Norfolk Press, London (1975).

15. By 'secondary standard', I am alluding to the practice in metrology of maintaining working standards that are convenient to use, but which are 'secondary' to primary standards, the latter being superbly accurate, but of little practical utility. Thus the metre is defined as the length of the path travelled by light in vacuum during a time interval of  $1/299792458$  of a second. Nevertheless it remains easier to use a carefully calibrated piece of metal for work in the real world.

This question of authority is of particular interest to the present discussion, because one branch of the institutional church, Liberal Protestantism, has hoisted 'reason' into the second highest place in its thinking and used it to decide which data are acceptable. Moreover, it has done so claiming that such an approach is justified in terms of science and the scientific method. Marxsen, for example, has written 'Modern scholars' views are controlled by the principles that came out of the Enlightenment',<sup>16</sup> that is, in summary, that human reason is the ultimate arbiter in matters of reality. Rudolf Bultmann, too, adopts this kind of rationale to defend his theological position.<sup>17</sup> It is appropriate to consider whether or not this argument is valid.

Quite clearly, in the light of the model of science advanced earlier, it is not. In the world of science, as we have seen, reason is not king; it takes a subservient role to data. As Russell has pointed out,<sup>18</sup> reason alone is inadequate to deduce how things are in the natural world. This was precisely what was wrong with so much of the 'science' of the ancient Greeks; proceeding forwards from axioms, even in a purely logical manner, proved to be of no use in determining how many teeth has a horse. There are more recent examples of the inadequacy of a 'science' that puts reason first, above data. For example, in 1903, Professor Simon Newcomb published an article that 'proved' that heavier-than-air machines could never fly.<sup>17</sup> Since he was professor of mathematics and astronomy at Johns Hopkins University, and vice president of the US National Academy of Sciences, his views carried a lot of weight. However, this example is interesting not just because it is one more instance of poor predictions by eminent experts, but because Newcomb went on maintaining the impossibility of flight for years after Orville Wright first flew 'Flyer 1' in December 1903. As late as 1906, Newcomb wrote that the impossibility was proved as completely '... as it is possible for the demonstration of any physical fact to be.' In other words, here was a scientist rejecting data because it did not fit a preconceived theory. And what foolishness it all was. Yet, it has to be said, Liberal Protestants, by exalting reason above its station, are open to exactly the same mistake.

Another feature of theological liberalism is its outdated reliance on the concept of cause and effect. Thus, if we turn again to Bultmann, we find him expressing the view that '... individual events are

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16. Marxsen, W., *The Significance of the Message of the Resurrection for Faith in Jesus Christ*, SCM, London (1968).

17. See for example R. Bultmann, *Kerygma and Myth*, SPCK, London (1953).

18. C. A. Russell, *Cross-currents*, p. 26.

connected by a succession of cause and effect'.<sup>19</sup> Yet scientists, led by the physicists, have long rejected the closed, direct cause-effect approach to phenomena. As Maxwell demonstrated, with the aid of his famous 'intelligence' over a century ago, much of what we observe in nature, including the Second Law of Thermodynamics, is statistical.<sup>20</sup> As Eddington's summary had it, '... great laws hitherto accepted as causal appear on minuter examination to be of statistical character'.<sup>21</sup> It is true that for certain statistical phenomena, for example, radioactive decay, discrete cause may precede individual event, but even here it is not possible to demonstrate this unambiguously by experiment. Unlike Bultmann, then, scientists do not affirm that *individual* events require their own unique cause.

If theological liberalism is wrong, in that it has got reason in the wrong place, is there a branch of Christianity which fares any better?

It has to be said, in fact, that both Catholicism and Biblical Protestantism do fare better. Both use reasoning processes that are much more closely akin to the process of genuine 'science', in that reason is used to act upon information that is essentially given, and not decided on *a priori* grounds which information may or may not be included. Because of this, it is not wholly necessary to distinguish between these two branches of institutional Christianity for the purposes of the present discussion, and indeed at many of the key points (e.g. the understanding of the Incarnation, belief in the historicity of the Resurrection, and the doctrine of the Holy Trinity) there is no difference between them. However, on a number of other issues, in particular, at the level of the authority of the Bible, there are still serious and significant differences between the two.<sup>22</sup> Accordingly, from now on I shall be defining and defending a model of Christian thought that is essentially of the Biblical Protestant variety, though much of what is said will be relevant, as well, to traditional Catholic thought.

### **A model of Christian thought**

Having established that, in science, reason does not control knowledge, but acts upon it, we are in a position to construct a similar

19. R. Bultmann, 'Existence and Faith', edited by Schubert M. Ogden, Meridian Books, New York (1960).

20. C. A. Russell, *Cross-currents*, p. 202.

21. A. S. Eddington, *The Nature of the Physical World*, Cambridge University Press (1929).

22. See for example J. I. Packer, *God's Words*, Chapter 10, Inter-Varsity Press, Leicester (1981).

model of Christian thinking. What emerges accords both with the approach of science and with the accumulated experience of believers down the ages. To do so, we turn to the Beveridge model, which with suitable paraphrasing becomes:

- (a) recognition and formulation of the problem (i.e., define the matter of faith or practice that is under consideration),
- (b) collection of relevant data (i.e., what does the Bible reveal about it?),
- (c) arriving at a conclusion by careful reasoning from the data,
- (d) making deductions in terms of logical consequences from the conclusion, and testing these by further reference to the Bible, or by discussion with the local church (here meaning the local body of believers, rather than the 'ordained' ministry),
- (e) reasoning that if the deductions do, indeed, accord with the results of further Bible study or with the experience of other believers, the deduction is sound.

It is necessary to add that, for a number of issues of church life, no clear conclusions will emerge from this process. Thus, it is not absolutely clear whether or not the church ought to be governed by episcopal or presbyterian means,<sup>23</sup> nor whether or not baptism may be administered to children of believers.<sup>24</sup> These are the areas in which different ideas exist, even amongst those believers who accept the Scriptures as authoritative, and where the Lord calls for the exercise of a loving forbearance towards those with different opinions.

Other issues, though, do become clear when subjected to scrutiny by this process. Divorce is seen to be against the will of God, as is the practice of homosexuality. Marriage and family relationships are closely defined, as are the relationships between Christians and society as a whole. Forgiveness and meekness are advocated, as is love towards all, friend and foe alike. The ideas may not be fashionable, but that does not necessarily prove them wrong. And believing them, on the basis that they have been 'revealed' rather than emerged as the result of pure unaided thought, is completely consistent with an essentially rational and scientific world view.

There are, however, points of the proposed model which need to

23. It is clear, though, that the Catholic (including Anglo-Catholic) insistence on the validity of the episcopal structure of government *alone* has no foundation (see F. F. Bruce, *The Spreading Flame*, 6th impression, Paternoster Press, Exeter (1976). It is arguably a method of church government; it is certainly not *the* method.

24. The other possibility, that baptism is for any child who may be brought along, surely cannot be defended rationally. Such practice, both in theory and practice, removes anything distinctively Christian from the act.

be considered further, and they can be broken down into a series of questions.

(1) *Is it Scriptural?* This is important, since the Bible is seen within the framework of the model to be the key source of 'data'. The question actually breaks down into two subsidiary questions: (i) Do the Scriptures teach that man cannot know God through the use of rational thought alone, and (ii) if they do, is there allowance for reason to have *any* role in the relationship of man with God?

To answer the first part is difficult. Scripture does not address itself specifically to refuting the modern idea that reason alone is enough. It does, though, deal in depth with the nature of man, including the intellect, and the result is not flattering. Jeremiah, for example, tells us that 'the heart is deceitful above all things' (Jer. 17:9), and that 'everyone is senseless and without knowledge' (Jer. 10:14). Agur, in Proverbs chapter 30, and Job at the end of his testing both confess utter ignorance of what really matters (i.e. God), and imply strongly that this follows from their status as mere men. It therefore does seem that Scripture teaches that man needs help in order to know God, and that he cannot acquire such knowledge on his own.

In which case, does Scripture have any use at all for reason? Here we turn to the words of Jesus himself, and find him telling us that the first and the greatest commandment is this: 'Love the Lord your God with all your heart, with all your soul and with all your mind.' (Matt. 22:37 NIV). The word translated here as 'mind' is the Greek *διανοια* (*dianoia*), which may alternatively be rendered as 'intellect'. In other words, Jesus is telling us that once we have received the revelation that God is really there, it becomes our duty to love him, in part, via the intellect. Thus we answer the second aspect of our original question: it is Scriptural to assign a role to reason, and one moreover that really is subservient to revelation.

(2) *Can revelation be considered data?* Related to this is the broader question, answered in the negative by Medawar,<sup>8</sup> of whether revelation is itself a source of knowledge. Clearly, the assumption is made in the proposed model of Christian thought that it is, and while such an assumption is axiomatic, rather than logically proven, it is actually defensible. For what is revealed in the Scriptures are those vital things about God, which would have remained hidden unless He had chosen to disclose them, concerning His character, His ultimate purposes and His desires for the people He has created. The Scriptural revelation is personal and propositional, and is focused on the Lord Jesus Christ, who spoke the words of God, revealed the Father and carried out His will. That much is basic.<sup>25</sup> But is it

25. For a proper discussion of these ideas, see J. I. Packer, ref 22, Chapter 1.

acceptable within the framework proposed, to treat all this as 'data'? I think it is, since revelation as a mode of knowledge is actually not so very far from our everyday experience. We do not generally get to know a person by carrying out controlled experiments. Neither do we get very far in a relationship simply by observing a person's habits. We actually get to know someone by talking to them at such a level that we begin to understand what they are like, what their desires are and what pleases them; such information comes only by a process analogous to God's revelation, i.e. by the person talking to us and imparting information about himself which we could not otherwise know.

However, God does not present us with information and expect it to be taken on board without any thought. He invites us to test it, if not by experiment, then at least by experience. Thus the Psalmist urges us to 'taste and see that the LORD is good' (Psalm 34:8). Elsewhere, we are told to 'Test me in this', says the LORD Almighty,' (Malachi 3:10, NIV) and to 'Test everything (and) hold on to the good' (1 Thess. 5:21, NIV). So we see that knowledge of God comes in a way similar to knowledge of any person, and that having been presented with it, we are free to subject it to empirical testing. Hence, we conclude that revelation is acceptable as a source of data about God.

(3) *What happens when science disagrees with Scripture?* This question begs two others, namely 'Does Scripture disagree with science?' and 'If it does, is it significant?'

It is a characteristic of liberal theologians to assume not only that there are extensive disagreements, but they are sufficiently significant that we must ignore the Scriptures except as documents of historical interest only. This view was summed up in 1929 by Canon C. E. Raven, in his book 'A Wanderer's Way', when he remarked of the evangelical Cambridge Inter-Collegiate Christian Union '... it seemed incredible that anyone with sufficient education to pass Little-go should still believe in the talking serpent, or Jonah's whale, or Balaam's ass, or Joshua's sun ...'.<sup>26</sup> It is, of course, worth commenting here that liberal theologians do not make their mark by failing to believe in these few minor points. They generally refuse completely to accept the objective reality of the resurrection of Jesus,<sup>27</sup> a doctrine that even the CICCUC of the 1920's would have considered of far greater importance than Balaam's ass.

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26. C. E. Raven, quoted in R. E. D. Clark, *Faith and Thought*, 112(2) (1986), 177.

27. See G. E. Ladd, *I believe in the Resurrection*, Hodder and Stoughton, London (1975), especially Chapter 10, for a careful outline (and refutation) of the various liberal arguments. See also M. J. Harris, *Easter in Durham*, Paternoster Press, Exeter (1985), for a critique of the views of Dr. David Jenkins, the present Bishop of Durham.

It is true, of course, that the Scriptures can be read in such a way that they contradict much *known* science. But then, by similar means, we could consider anyone who uses such words as 'sunrise' or 'heartache' to be an illiterate backwoodsman. The key question here is one of hermeneutics: what were (and are) the Biblical writers trying to convey? Their picture language may be formally inadequate, but then so is ours today, and such inadequacy is not usually held to invalidate communication.

It is not, of course, sufficient to argue picture language at every point. In the case of the Resurrection of Christ, and of His miracles, we need to insist on their historicity. The authors of the New Testament were concerned to convey a message, it is true, but one that, by its very nature, could not possibly benefit from untruths. If Jesus did not rise from the dead, two things follow: Firstly, the New Testament Church was built on a lie by people who knew themselves to be lying. Secondly, either God has not, after all, vindicated Jesus, contrary to Peter's claim in Acts 2:36, or God is of strictly limited power, and incapable of raising the dead. Either view has profound consequences for any understanding of the nature and character of God.

The reality of the situation is this: whether or not one believes in the literal truth of the Resurrection depends entirely on one's philosophical presuppositions. Those presuppositions are not, in themselves, capable of scientific verification. To say that Jesus did not rise from the dead because no-one rises from the dead is circular reasoning,<sup>28</sup> since one cannot make the specific deduction about Jesus without accepting the larger generalization, and the larger generalization cannot be valid unless one is *certain* about the case of Jesus. Such reasoning is simply not amenable to scientific examination. Hence, belief in the Resurrection has to remain a matter of faith. There can be no doubt, however, that the theological liberals are mistaken on this crucial assertion; unbelief does not follow *logically* from a genuinely 'scientific' viewpoint, and it is therefore possible to believe in the historicity of the Resurrection *and* maintain a scientific world view.

## Conclusion

A model of scientific thought has been presented in which it is argued that 'reason' does not control input, but merely acts in a way subservient to the observed data. From this starting point, a parallel model of Christian thought is presented, in which 'reason' occupies a

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28. See P. B. Medawar, *loc. cit.* on the 'Law of Conservation of Information'.

similar place. Such an approach is found to correspond closely with the conservative theology of Biblical Protestantism, or Roman Catholicism, rather than to that of theological Liberalism, despite the latter's claim to be more 'scientific'. Overall, it is concluded that orthodox Christian belief is more compatible with the scientific method than is theological Liberalism.

Enrico Cantore

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## The Christic Origination of Science

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### Introduction: From Fact to Principle

This essay investigates the contributions Christ, living and acting in his disciples, made to the rise of science. *Christic* refers here to Christ while *Christian* refers to his disciples; *Christianity* accordingly designates the totality of Christ's disciples taken as a cultural unit. *Science* means the systematic study of the intrinsic intelligibility of nature or observable reality. *Humanism* means—according to its original and still more common usage—the doctrine of human dignity, open to religion.<sup>1</sup>

This essay starts from two realizations. Contrary to a common prejudice, history has proven the intimate association of science and Christianity, since the former arose only from the latter; this influence, however, has not yet been adequately investigated. In fact, at least ever since Whitehead's seminal remarks, historicals have increasingly documented the decisive role of Christians in the rise of science.<sup>2</sup> An outstanding example is Jaki's survey of all the cultures (Chinese, Indian, Graeco-Roman, Arab, etc.) which achieved the technical presuppositions of science such as logical and mathematical sophistication, refined technology, advanced scholarship and the like.<sup>3</sup> Jaki proves that only Christianity generated 'live-born science', and this because of the typical Christian dogma of creation. Hence his insistence on 'the crucial role played in the origin of

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1. See for instance Wm. Hallock Johnson, *Humanism and Christian Theism* (New York: Revell, 1931); 'Secular vs. Christian Humanism', *Eternity* (Jan. 1982), pp. 15-18; Raymond J. Seeger, 'On the Humanism of Science', *Journal of the American Scientific Affiliation* 36 (1984), pp. 19-27.

2. Alfred N. Whitehead, *Science and the Modern World* (1925), ch. 1; R. Hooykaas, *Religion and the Rise of Modern Science* (Grand Rapids, MI: Eerdmans, 1972); Eugene M. Klaaren, *Religious Origins of Modern Science: Belief in Creation in Seventeenth-Century Thought* (Grand Rapids, MI: Eerdmans, 1977). For the influence of Patristic theology see Thomas F. Torrance, *The Ground and Grammar of Theology* (Charlottesville: University Press of Virginia, 1980), esp. pp. 52-60; David C. Lindberg, 'Science and the Early Christian Church', *Isis* 74 (1983), pp. 509-30.

3. Stanley L. Jaki, *Science and Creation: From Eternal Cycles to an Oscillating Universe* (New York: Science History Publications, 1974).

science by ... belief in ... the creative act of God'.<sup>4</sup> This view is becoming consensual. For instance, the Marxist Joseph Needham, an authority on the history of Chinese science and technology, preceded Jaki in stating that China failed to develop science proper because it 'lacked the idea of (divine) creation'.<sup>5</sup> However, such consensus tends to remain sterile, as can be seen from these two authors. Thus Needham effectively ignores Christianity and traces the origin of science to 'the analyzable differences in social and economic pattern between China and Western Europe'.<sup>6</sup> Jaki, in turn, is satisfied with such a baffling thesis as 'the existence of a single intellectual avenue forming both the road of science and the ways to God'.<sup>7</sup>

This essay faces the issue of principle raised by the above disclosure of fact. For the discussion of this issue—as Needham, for instance, points out—is important to avoid the seemingly 'inescapable dilemma' of ascribing the origin of science to either 'pure chance' or 'racialism however disguised'. Indeed, 'chance' must be rejected because it entails 'the bankruptcy of history as a form of enlightenment for the human mind' while 'racialism' asserts without proving that 'one particular group of peoples ... possessed some intrinsic superiority to all other groups of people'.<sup>8</sup>

This essay will follow a *humanistic-genetic approach*. We shall take for granted that science profoundly affects the way people conceive and practice human dignity.<sup>9</sup> On this basis, we shall investigate the reasons for the fact that science arose solely from Christianity. We shall consider three main questions: (I) How is it possible to understand this fact? (II) What does this fact actually amount to, that is, what did Christianity uniquely do to originate science? Why and how did it do it? (III) What message should we extract from this fact and its explanation?

## I. The Humanistic Implausibility of Science

How is it possible to understand the fact that science arose only from

4. S. L. Jaki, *The Origin of Science and the Science of Its Origin* (Chicago: Regnery Gateway, 1978), p. vii.

5. Joseph Needham, *The Great Titration: Science and Society in East and West* (London: Allen & Unwin, 1969), pp. 36f.

6. Needham, *op. cit.*, p. 217.

7. Jaki, *The Road of Science and the Ways to God* (Chicago: Chicago University Press, 1978), p. vii.

8. Needham, *op. cit.*, p. 216.

9. See for instance my *Scientific Man: The Humanistic Significance of Science* (New York: Institute for Scientific Humanism Publications, 1977); for the brief introduction, my

Christianity? Undoubtedly, at first blush the question may appear far-fetched, and even more bizarre the tentative answer that science ultimately arose because of the personal activity of Christ. But we should not be confused by this reaction due to two instinctive yet misleading prejudices of contemporary public opinion: one prejudice being that science is a spontaneous or natural cultural phenomenon and the other that science has nothing to do with religion. Indeed, if science were so natural from the cultural point of view, why did it not viably arise until 1600 A.D.? Also, if science had nothing in common with religion, why did it arise only from Christianity? Great scientists of the past and the present tend vigorously to refute these prejudices on the strength of their own creative experience. Thus, for instance, Galileo himself was surprised that science—as embodied in the heliocentric doctrine—could assert itself at all. Against those who 'wonder that there are so few followers of [it]', Galileo professed himself 'astonished that there have been any up to this day . . .

Nor can I ever sufficiently admire the outstanding acumen of those who have taken hold of this opinion and accepted it as true; they have through sheer force of intellect done such violence to their own senses as to prefer what reason told them over that which sensible experience plainly showed them to the contrary.<sup>10</sup>

Einstein, in turn, used to insist on the religious connotation of science. Thus, for instance, he dismissed the psychological explanation that Max Planck's 'inexhaustible patience and perseverance' in quantum research was due to 'extraordinary will-power and discipline'. His own explanation was of a basically religious kind:

The state of mind which enables a man to do work of this kind is akin to that of the religious worshipper or the lover; the daily effort comes from no deliberate intention or programme, but straight from the heart.<sup>11</sup>

Such experience of creative scientists provides the key for understanding why science arose only from Christianity. This key is the *humanistic implausibility of science* which consists in the virtual impossibility for people living in the prescientific age to accept and implement the humanistic presuppositions of science itself, that is, a series of theoretical convictions and ethical motivations without which

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essay 'Humanistic Significance of Science: Some Methodological Considerations' in *Philosophy of Science* 38 (1971), pp. 395-412.

10. Galileo Galilei, *Dialogue Concerning the Two Chief World Systems—Ptolemaic & Copernican*, tr. S. Drake (Berkeley, CA: University of California Press, 1967), pp. 328-29.

11. Albert Einstein, *Ideas and Opinions*, tr. S. Bargmann (New York: Crown, 1954), p. 227.

science cannot exist. We can identify at least four such presuppositions which need to be widely shared by a culture before science can be produced by that culture. The first two are the unwavering persuasions that nature has a transensible structure and that this structure can be penetrated by the human mind; the other two are the unquestioning assurances that the intellectual exploration of such structure is inherently rewarding and obligatory for humans.

The persuasion about the *transensible structure of nature* is the fundamental theoretical conviction. Indeed, people would never do science unless they were certain that the structure of nature that can be observed through the senses is true, but only in a superficial manner, so that it points beyond itself to a more genuine and realistic truth. For science demands that the mind go beyond the sensible appearances of nature. But this step amounts to a wrenching change of attitude for prescientific people as can be seen by the difficulty of accepting the heliocentric system referred to by Galileo. For the acceptance of this system required a seemingly reckless attitude: what seemed to be self-evident, i.e., the turning of the sun around the earth, had to be judged misleading; whereas what appeared to be nonsensical, i.e., the turning of the earth around the sun, had to be deemed most reasonable. Hence the first aspect of the humanistic implausibility of science: science could only arise if people were prepared to turn around their instinctive way of considering nature in relation to themselves and their dignity.

The persuasion about the *transensible structure of nature* is the complementary theoretical conviction on which science rests. Indeed, people would never do science unless they were certain that the transensible structure of nature can be truly understood by the human mind, that is, known with precision in its countless manifestations and also grasped as a unified whole. For this is clearly what science demands of its practitioners to start to exist. It requires that they aim at *discovery*—i.e., the intellectual detection of some hitherto unknown feature of nature—and that they do so with antecedent trust of being able to succeed in their effort, no matter how remote from ordinary views the feature of nature may be they set out to explore. Hence the second aspect of the humanistic implausibility of science which compounds the first: science could only arise if people not only became certain about the transensible structure of nature but also were ready to assume as unquestionable that such structure was graspable by the human mind.

The assurance about the *inherent rewardingness of the intellectual exploration of nature* is the fundamental ethical motivation of science. Indeed, people would never do science unless they were certain that

the efforts required for seeking the understanding of nature were worthwhile in themselves rather than because of some effects they might produce, such as technological applications, public acclaim and so forth. For science, being the quest for discovering the unknown, would never exist were its practitioners to count beforehand on being eventually able to use their discoveries for practical purposes. Actually, a scientific researcher cannot even be sure ahead of time that he will eventually achieve the discovery he set out to attain. Accordingly, science could not start to exist unless those who first engaged in it deemed the intellectual exploration of nature to be the inherent reward of their efforts, and this because such an exploration actualized their human dignity as seekers for truth. Hence the third aspect of the humanistic implausibility of science: science could only arise if people were ready to commit all their resources to the intellectual exploration of the transensible structure of nature as to an enterprise which deserves to be carried out for its own sake, independently of any further advantages that can arise from it.

The assurance about the *inherent obligatoriness of the intellectual exploration of nature* is the other basic ethical motivation of science. Indeed, people would never do science in the more demanding sense of the term—that is, engage themselves in the exploration of hitherto completely unknown areas of nature—unless they were certain that their efforts were not only worthwhile in themselves but also somehow obligatory for them. For the trail-blazing work of science is so daunting that it can hardly be endured by the persons who feel attracted by it unless they are sustained by a sense of *noblesse oblige*. That is to say, they must be convinced that it is their duty, as scientifically gifted individuals, to engage in research and persevere in it, no matter how great the difficulties involved, under penalty of injuring human dignity in themselves and others. Hence the fourth aspect of the humanistic implausibility of science: science could only arise if people were able so comprehensively to overcome their instinctive objections toward the exploration of the transensible structure of nature as to regard this exploration not only as its own reward but also as their inescapable obligation as dignified human beings.

In sum, the origin of science is very surprising because it demanded such a radical change in the way people conceived and practiced their dignity with regard to nature that it could hardly occur without the mediation of some unique humanistic factor; the more so, when one considers that science can viably exist only if its humanistic presuppositions are widely shared. For science is public in principle, affecting as it does the overall way people think and act. Hence it

cannot survive, much less thrive, unless the cultural milieu in which it is started by some pioneers is largely prepared to welcome and support it. This being the case, it makes sense to hypothesize the activity of Christ in Christianity as that unique factor which makes it possible to understand why science arose at all.

## II. The Humanizing Activity of Christ Toward Science

What does Christianity uniquely do to originate science? Why and how did it do it? In light of the preceding, we shall answer these questions in three successive steps as follows: (A) Christianity developed the humanistic presuppositions of science; it succeeded in doing so because Christ (B) rebuilt the foundations of humanism and (C) educated his followers to the methodological autonomy of science.

### *The Christian Development of the Humanistic Presuppositions of Science*

The unique contribution Christianity made to the origination of science was to develop the humanistic presuppositions of science itself. Four hints taken from the history of prescientific Christianity suffice to indicate the nature of this contribution: (i) the conviction about both the reality and the transcendence of the cosmos, (ii) the appreciation of material labour as a quasi-liturgical service of God, (iii) the estimation of natural things as God's messengerial gifts to humans and their fraternal companions, and (iv) the conviction of intellectual research as a humanizing obligation toward God.

(i) ***The conviction about both the reality and the transcendence of the cosmos*** is especially evident in medieval art. For this art is characterized by what has been called 'the figural interpretation of reality' which presents two simultaneous features. One is the affirmation of the genuine reality of sensible things, 'in continual fight against merely spiritualistic and neo-Platonic tendencies'; while the other is the insistence that this reality has a meaning which points beyond itself:

Earthly life is absolutely real, of the reality in which the Logos has penetrated, but for all its reality it is only . . . a 'figure' of what is authentic, future, final and true . . . the earthly event is a prophecy or 'figure' of that part of reality immediately and completely divine which will become actualized in the future.<sup>12</sup>

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12. Erich Auerbach, *Studi su Dante*, tr. M. L. DePieri Bonino and D. Della Terza (Milan: Feltrinelli, 1966), p. 218.

In other words, earthly things are both real and transcendent because they bear the impress of the Son of God who created them and continually supports them. An example of such 'imitative medieval art whose immediate purpose was the sensible representation of transcendent contents' is 'the idealism and naturalism of Gothic sculpture and painting'.<sup>13</sup>

This attitude was something new when compared with non-Christian cultures. For it exhibited 'a new ability to give sensible form to things', one in which 'sensible experience arose to new life'.

To give to the real event its legendary strength, to insert it with all its spiritual dignity and its miraculous power in the everyday experience; this is the naturalism of the early Middle Ages which culminated in a spirituality which embraced the whole earthly life . . .<sup>14</sup>

Another example of the same new way of considering nature is the symbolism of Dante's *Divine Comedy* which stresses the transcendent aspect of things: 'For things are not things merely. Things in the created universe are both things and signs.'<sup>15</sup> Yet Dante's symbolism is most realistic, for it pays close attention to the objective concreteness of things:

The sign which is found in things inheres in them objectively . . . the sign is thought to be in the thing and yielded by the thing. God has put it there. Man does not contribute it out of his own mind and heart. He discovers it.<sup>16</sup>

Hence a first humanistic connection between science and Christianity is clear: the education of the human mind to the perception of a transensible structure of nature, the invitation to discover an objective, if hidden, message of meaning conveyed by the sensible appearances of nature itself.

(ii) ***The appreciation of material labour as a quasi-liturgical service of God*** is embodied in the operative motto of the Benedictine order *Ora et Labora* (Pray and Work). It manifested a new humanistic mentality—and one with important scientific implications—for it proclaimed as never before in the history of humankind the dignifying significance of the human intercourse with nature. Indeed, this mentality assumed that material labour was not meant to remain purely material, since it had to be undertaken and conducted in imitation of and in association with the Son of God who became a

13. Auerbach, *op.cit.*, p. 20.

14. Auerbach, *op.cit.*, pp. 19–20

15. Charles S. Singleton, *Dante Studies 1—Commedia: Elements of Structure* (Cambridge, MA: Harvard University Press, 1965), p. 27.

16. Singleton, *op.cit.*, p. 28.

labourer for our sakes. Accordingly, Christianity was the first culture which made many of its members esteem the working involvement with nature as genuinely humanizing, thus going beyond the lingering reservations of other religiously advanced cultures, such as the sapiential tradition of the Old Testament (cf., for example, Sirach 38:24–34).

With regard to science, this mentality proved important for at least two reasons, one technological and one motivational. The technological reason lies in the fact that, by systematically engaging themselves in material labour, these Christians were able substantially to contribute to the technical presuppositions of science (observation of nature, use of instruments, etc.). Thus the period between 1250 and 1350 has been called 'the century of inventions' because in it 'foundations had already been laid for the later technological ascendancy of Europe'.<sup>17</sup> But the motivation that was fostered by this attitude was even more important for the rise of science. For these Christians were able to develop an involvement with nature which was both practical and intellectual, since educated persons were numerous among them. As a consequence, they introduced the idea that the intercourse with nature was an inherently rewarding and obligatory occupation, the means to glorify God and serve neighbour, and actually a way to share in the cosmic wisdom of God himself: 'There was a sense in which the cathedral builders, like the clock-makers, had a celestial prototype'.<sup>18</sup>

(iii) *The estimation of natural things as God's messengerial gifts to humans and their fraternal companions* found its highest expression in the *Canticle of Brother Sun* by St. Francis of Assisi. Though Francis was himself no intellectual, his poem documents how Christianity humanistically prepared the advent of science because it so movingly embodies the common views of the time about the meaning of nature as the carrier of a transensible intelligibility which both commands and rewards the attention of the people.

In sum, the *Canticle of Brother Sun* is the poetic *credo* of the medieval belief in the beauty, goodness and intelligibility of the created world. It sums up that tradition that can be seen in the hymns, the arts and the poetry of the period.<sup>19</sup>

This poem is particularly impressive because it stresses that absolutely everything takes place in God's creation—including

17. Arnold Pacey, *The Maze of Ingenuity: Ideas and Idealism in the Development of Technology* (Cambridge, MA: M.I.T. Press, 1976), p. 39, cf. pp. 56–86.

18. Pacey, *op.cit.*, p. 74.

19. Lawrence S. Cunningham, *Saint Francis of Assisi* (Boston, Twayne, 1976), p. 56.

explicitly suffering and death—makes eminent sense, no matter how displeasing it can be to human sensibility.

Concretely, this poem points to science in two principal ways. One is the evidence it gives of a common-place—namely, the doctrine of the so-called two books of divine revelation—which was to inspire such scientific pioneers as Kepler, Galileo and the founders of the Royal Society:

God is revealed to men by means of two books: the Bible and the world of nature. This was axiomatic in the medieval world . . .<sup>20</sup>

The other pointer is the persuasion conveyed by this poem that natural things are pre-eminently useful to people not as instruments of power but as messengers of meaning: 'Things prove useful precisely in so far as they signify God.'<sup>21</sup>

(iv) *The conviction of intellectual research as a humanizing obligation toward God* was the special legacy of St. Thomas Aquinas, the great synthesizer of the prescientific Christian world view. His inspirational relevance for science is increasingly acknowledged also by secular-minded historians.<sup>22</sup>

Thomas starts from St. John's teaching that, since all things were created by the Logos-Son-of-God, they manifest the light of God (cf. John 1:3–5): 'The very actuality of a thing is a certain light of it.'<sup>23</sup> Hence he derives two consequences: the greatness of things in the plan of God and the intellectual character of human dignity. Thus he speaks of 'the nobility of things' which consists in their 'existence'.<sup>24</sup> And he perceives the operations of nature as an expression of God: 'the very operation of nature is also an operation of the divine power.'<sup>25</sup> But he also clarifies that, precisely because things have been created by God, they have been made by him to operate on their own:

Thus therefore should one understand God's way of operating in (natural) things, that the things themselves have their own operations.<sup>26</sup>

20. Cunningham, *op.cit.*, p. 55.

21. Giovanni Getto, 'Francesco D'Assisi ed il Cantico di Frate Sole', in his *Letteratura Religiosa dal Due al Novecento* (Firenze: Sansoni, 1967), p. 60.

22. See for instance W. C. Dampier, *A History of Science and Its Relation to Philosophy and Religion* (London: Cambridge University Press, 1961), pp. 84–89; also Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution and Inheritance* (Cambridge, MA: Harvard University Press, 1982), pp. 91–2.

23. *Commentarium de Causis* I, 6; cited from Heinrich Schlier, 'Im Anfang war das Wort—Zum Prolog des Johannesevangeliums' in his *Die Zeit der Kirche* (Freiburg: Herder, 1955), p. 285.

24. *Contra Gentes* I, 28.

25. *De Potentia* q 3, a 7, ad 3um.

26. *Summa Theologica* I, q 105, a 5, c., cf. q 103, a6, c.; *C. G.* III, 69.

Thomas also derives the intellectual character of human dignity from God's universal illumination of humans (cf. John 1:9): 'The light of natural reason . . . is nothing but an imprint of the divine light in us.'<sup>27</sup> Accordingly, 'the rational creature is worthier than all temporal and bodily creatures';<sup>28</sup> also, 'the human being is above all the mind of the human being'.<sup>29</sup>

On the strength of these views, Thomas insists both on the realism of human knowledge and the human duty to pursue knowledge. He insists on the realism of human knowledge, because the mind depends for its illumination on things that exist outside it: 'The object of knowledge is the thing known according to its existence outside the knower.'<sup>30</sup> And he insists on the human duty to pursue knowledge, because only thereby can people fulfill the goal God intended to attain by creating the mind and the universe as a whole:

The goal of the human soul and its ultimate perfection is to go through the entire order of creatures by knowledge and love and so to reach the first principle that is God.<sup>31</sup>

In particular, Thomas champions the study of creatures as beneficial to religion, because 'this study leads to admiration of the most high power of God . . . inflames the souls of humans toward love of the divine goodness'.<sup>32</sup> Thus he indignantly rejects the opinion that 'it does not matter for the truth of the faith what one feels about creatures, provided one has the right feeling about God'. He reasons thus:

Any error about creatures entails a false opinion about God and leads the minds of people away from God.<sup>33</sup>

As a result, we have a first explanation of principle for the historical fact that science arose only from Christianity. This explanation is that Christianity was the only culture which succeeded in developing the humanistic presuppositions of science. For Christianity, as we have seen, truly enabled its members to accept as reasonable a transensible structure of nature and its intrinsic intelligibility; likewise it enabled them to regard the exploration of this intelligibility as both inherently rewarding and obligatory.

27. *S. T. I* IIae, q 91, a 2, c.; cf. *I*, q 84, a 5, c.; q 93, a 4, c.; *I* IIae, q 19, a 4, c.; etc.

28. *S. T. II* IIae, q 7, a 2, c.

29. *S. T. I* IIae, q 29, a 4 c.

30. *De Veritate* q 14, a 8, ad 5um.

31. *C. G.* II, 87.

32. *C. G.* II, 2.

33. *C. G.* II, 3.

*The Christic Rebuilding of Humanistic Foundations*

Why did Christianity, alone among other cultures, succeed in developing the humanistic presuppositions of science? The answer is implicit in the foregoing survey. Indeed, Christians were able to achieve the outlined convictions and motivations precisely because they were Christians—that is to say, in so far as they were in vital communion with Christ. Thus the development of the humanistic presuppositions of science and the consequent origin of science itself must somehow ultimately be traced to the activity of Christ himself. But what activity, operating in what manner?

The clue to the detailed answer is offered by a well known anthropological datum: educated persons of all advanced cultures previous to Christianity balked as a rule at considering as objectively dignified and socially acceptable the systematic involvement with nature which is indispensable for scientific research. Impressive examples are the postures adopted by such scientifically gifted individuals as Aristotle and Archimedes. For Aristotle was a great observational biologist—the ‘father of biology’ according to many, and the chief hero of Charles Darwin himself. And yet Aristotle the ethicist has no room in his system of values for the material activity demanded by scientific research, so much so that he expects the sage—i.e., the genuinely dignified person—to dedicate himself solely to contemplation while leaving the involvement with matter to lesser humans such as artisans and slaves. The same dim view of material activity was taken by Archimedes, another great forerunner of modern science—and he was highly praised by Antiquity for that view, as we know from Plutarch:

Archimedes possessed such a lofty spirit, so profound a soul and such a wealth of scientific theory, that although his inventions had won for him a name and fame for superhuman sagacity, he would not consent to leave behind any treatise on this subject . . . regarding the work of an engineer and every art that ministers to the needs of life as ignoble and vulgar . . .<sup>34</sup>

Clearly, then, non-Christian educated persons tended to be afraid of material nature, regarding it as impure in itself and as a source of degradation for those who dealt with it. But this is the clue for the activity of Christ that led to the development of the humanistic presuppositions of science by his followers. For Christ disclosed that human sin rather than intrinsic impurity lies behind the widespread tendency to fear nature; also, he enabled his followers to reverse

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34. Cited from Freidrich Klemm, *A History of Western Technology*, tr. D. W. Singer (Cambridge, MA: M.I.T. Press, 1964), pp. 21-2.

their fear of nature and to work with him in fulfilling God's plan about the whole cosmos.

*Christ disclosed that human sin rather than intrinsic impurity lies behind the widespread tendency to fear nature.* He taught in this vein particularly when exposing the mentality underlying Jewish dietary laws and similar purity rules, saying, 'There is nothing outside a person which by going into him can defile him, but the things which come out of a person are what defile him' (Mark 7:15).<sup>35</sup> Christ insists that impurity comes only from the human heart and its sinfulness:

What comes out of a person is what defiles a person. For from within, out of the heart of the person, come evil thoughts. . . . All these evil things come from within, and they defile a person. (vv. 21-23)

But this Christic teaching obviously applied in general to the relationship of humans to nature and therefore discloses the root of the human tendency to fear nature.

The dynamism connecting human sin to the fear of nature is already evident from the biblical narration of the Fall. Adam and Eve sinned by refusing to acknowledge nature as God's messenger to them and thus they reduced nature itself to the mere instrument of their self-aggrandizement. Having been tempted to 'become like God, knowing good and evil', they 'saw that the (forbidden) tree was good for food and . . . a delight to the eyes and . . . to be desired to make one wise'. (Gen. 3:5-6). The result was a thorough upheaval in the relationship between humans and nature as originally intended by God and one which caused humans to fear nature itself. For nature was now 'cursed' by God because of the human sin (cf. vv. 17-19).

Paul, illuminated by Christ, further clarified such dynamism of human sin and fear of nature by outlining in some detail the inwardly personal character of sin, the radical inversion it causes in the relationship of humans with nature and the dehumanizing consequences this entails. Sin involves nature in the first place because it is an inward refusal by humans to recognize God through nature and thereby acknowledge their dependence on him. Indeed, the sinners

by their wickedness suppress the truth. For what can be known about God is plain to them . . . clearly perceived in the things that have been made. So they are without excuse; for although they knew God they did not honour him as God or give thanks to him. (Rom. 1:18-21)

Sin involves nature in the second place because, as a consequence, sinners radically invert the God-intended relationship of humans to

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35. Translation of Revised Standard Version, with occasional minor stylistic changes.

nature. Nature is no longer for them the means for communion with God but rather the means for the rejection of God:

They exchanged (literally, *inverted*; Greek *ellaxan*) the glory of the immortal God for images resembling mortal man or birds or animals or reptiles. (v. 23)

Sin involves nature in the third place because, as a further consequence, sinners become dehumanized, inwardly and outwardly. It does so inwardly, in that they are no longer able properly to judge the significance of things, and yet they claim to be better able than other people to do so. 'They became futile in their thinking and their senseless minds (literally, *hearts*) were darkened. Claiming to be wise, they became fools' (vv. 21-22). It does so outwardly, in that God abandoned them to their disgraceful instincts: 'Therefore God gave them up in the lust of their heart to impurity . . .' (v. 24; cf. vv. 26-31).

As a result, it is clear why sin leads people to a fearful attitude toward nature. The reason is ultimately the sinners' awareness that they are at the mercy of the powers of nature instead of being the dominators of nature as they set out to be. Hence, for instance, their bragging with bad consciousness about satisfying all their perverse inclinations: 'Though they know God's decree that those who do such things deserve to die, they not only do them but approve those who practice them' (v. 32). Hence also their servile cringing before the forces of nature; having become 'slaves to the elemental spirits of the universe' (Gal. 4:3; cf. Col. 2:8), they live in a perpetual superstitious anxiety about doing or not doing the proper thing in dealing with nature: 'Do not handle! Do not taste! Do not touch!' (Col. 2:20).

*Christ enabled his followers to reverse their fear of nature and to work with him in fulfilling God's plan about the whole cosmos.* Christ's activity was not only theoretical but also very much practical in helping people overcome the fear of nature instilled in them by sin. Thus through his self-sacrifice of love he overcame the inversion caused by sin in the relationship between humans and the totality of God's creation:

For in him all the fullness of God was pleased to dwell, and through him to reconcile [literally, *'to undo the inversion'*; Greek, *apokatallaxai*] to himself all things, whether on earth or in heaven, making peace by the blood of his cross. (Col. 1:20)

He also mediated the divine healing of the human heart: 'God's love has been poured into our hearts through the Holy Spirit who has been given to us' (Rom. 5:5).

Above all, Christ associated his followers to himself in fulfilling his God-appointed mission with regard to the totality of the cosmos. For God has 'a plan for the fullness of time: to unite all things in him [Christ], things in heaven and things on earth' (Eph. 1:10). Hence, in and through Christ, the Christians are entrusted with everything that exists:

All things are yours, whether . . . the world or life or death or the present or the future, all are yours; and you are Christ's; and Christ is God's. (1 Cor. 3:21-23)

The purpose of this entrustment is that, by actualizing their dignity as children of God, the Christians actively share in Christ's liberation of the cosmos from the influence of sin:

For the creation waits with eager longing for the revealing of the children of God . . . because the creation itself will be set free from its bondage to decay and obtain the glorious liberty of the children of God. (Rom. 8:19-21)

Consequently, the Christians should not fear the suffering and death entailed by their association with Christ relative to the totality of creation because only through them can they bring forth genuine and lasting life for themselves and for everything else:

We know that the whole creation has been groaning in travail together until now; and not only the creation, but we ourselves, who have the first fruits of the Spirit, groan inwardly as we wait for adoption as children, the redemption of our bodies. For in this hope we were saved. (vv. 22-24)

As a result, it is clear that Christ most profoundly and most powerfully rebuilt the foundations of the relationship between human dignity and nature. By the same token, it is also clear why Christianity was the only culture which succeeded in developing the humanistic presuppositions of science and, as a consequence, the only culture that brought forth live-born science. This therefore is the ultimate explanation of the origin of science—one which excludes both chance and racialism, to refer to Needham's 'dilemma'—the activity of Christ himself, operating in and through his followers. In this sense we are justified to speak of the Christic origination of science.

The conclusion reached here, though unusual, is not totally unprecedented. For instance, a similar view can be found in the works of the evangelical theologian Thomas F. Torrance who has reflected much on the influence of Christ on the origin of science:

Bathed in the Light of God that shines in concentrated form in Jesus Christ, the universe took on a radically different aspect.

The incarnation (of Christ) had the effect of sanctifying the physical

universe for God, thus requiring for it a new respect altogether, if only as the medium which God has established for communion between himself and mankind, but also as a creaturely realm of reality endowed with meaning and direction in the creative purposes of God which are yet to be consummated. Thus it was from the sheer goodness and beneficence of God, which overflowed into the world through Jesus Christ and were embodied in his physical existence in our space and time, that Christianity learned to read the authentic nature of empirical reality, no longer as something hostile, malevolent, or alien to the human spirit, but as the very sphere in which God's presence has come to dwell in order to share his own glory with it. The implications of this for a new scientific view of the universe can be seen . . .<sup>36</sup>

### *The Influence of Christic Education on the Methodological Autonomy of Science*

A major objection which surfaces is, if the activity of Christ originated science, how can science itself remain a distinctively human enterprise? For science is truly such—a proof of human creativity, an outstanding glory of the human race.

A concrete answer can be had by considering Galileo, and this for two reasons. The first reason is that Galileo became the scientist par excellence precisely because of the humanistic influence of Christ on the culture from which he issued and in which he thrived. The second reason is that Galileo was able so harmoniously to integrate science with the Christian faith as to discover that the faith fosters the methodological autonomy of science itself.

In the first place, it is clear that Galileo became the scientist par excellence because of the humanistic presuppositions of science which Christ had inprinted in the culture in which Galileo was to operate. Indeed, such attitudes had become so accepted in Galileo's environment that he could appeal to them as self-evident verities when publicly explaining the foundations of scientific research. Thus, for instance, Galileo rejected the still widespread tendency to study nature solely in order to 'save the (sensible) appearances', and this he did by assuming as self-evident the existence and intrinsic intelligibility of the transensible structure of nature. Contrasting the mentalities of the 'philosophical' astronomers and of the 'mathematical' ones, he took for granted that the former,

going beyond the demand that they somehow save the appearances, seek to investigate the true constitution of the universe—the most important and most admirable problem that there is. For such a constitution exists; it is

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36. Thomas F. Torrance, *Divine and Contingent Order* (New York: Oxford University Press, 1981), pp. 65, 67–68.

unique, true, real and could not possibly be otherwise; and the greatness and nobility of this problem entitle it to be placed foremost among all questions capable of theoretical solution.<sup>37</sup>

Likewise Galileo assumed as unquestionable the rewarding character of the intellectual exploration of nature:

When I consider what marvellous things and how many of them men have understood . . . I recognize and understand only too clearly that the human mind is a work of God's and one of the most excellent.<sup>38</sup>

In the same vein Galileo found it obvious that people should regard the intellectual exploration of nature to be an obligation of their dignity:

Sarsi says he does not wish to be numbered among those who affront the sages by disbelieving and contradicting them. I say I do not wish to be counted as an ignoramus and an ingrate toward nature and toward God; for if they have given me my senses and my reason, why should I defer such great gifts to the errors of some man?<sup>39</sup>

In the second place, Galileo was so deeply permeated by Christ's humanistic influence as to find in his Christian reading of the Bible the very evidence for the methodological autonomy of science, and this in the light of an unbroken tradition in the Christian Church. For Galileo highly respected the Bible:

I think in the first place that it is very pious to say and prudent to affirm that the holy Bible can never speak untruth—whenever its true meaning is understood.<sup>40</sup>

But Galileo also knew, with tradition, that God manifests and communicates himself to humans not only through the Bible but also through nature, and this according to the teaching of the Bible itself:

For the holy Bible and the phenomena of nature proceed alike from the divine Word, the former as the dictate of the Holy Ghost and the latter as the observant executrix of God's commands. . . .<sup>41</sup>

A hundred passages of holy Scripture . . . teach us that the glory and greatness of Almighty God are marvellously discerned in all his works and divinely read in the open book of heaven.<sup>42</sup>

37. *Letters on Sunspots in Discoveries and Opinions of Galileo*, tr. S. Drake (Garden City, NY: Doubleday-Anchor Books, 1957), p. 97.

38. *Dialogue* (cf. above, n. 10), p. 104.

39. *The Assayer in Discoveries*, p. 272.

40. *Letter to the Grand Duchess Christina in Discoveries*, 181.

41. *Ibid.*, p. 182.

42. *Ibid.*, p. 196.

Thus Galileo found it self-evident that God—being consistent within his own principles and respectful of the dignity of humans he had created with the ability to understand nature on their own—would never demand that humans forgo the use of their faculties in order to learn from the Bible about the structure of nature:

But I do not feel obliged to believe that the same God who has endowed us with senses, reason and intellect has intended to forgo their use and by some other means to give us knowledge which we can attain by them. He would not require us to deny sense and reason in physical matters which are set before our eyes and minds by direct experience or necessary demonstration.<sup>43</sup>

Consequently Galileo could not doubt that science should be recognized as autonomous relative to the Christian faith and this according to the teaching of the same faith. Even more, Galileo inferred therefrom that the discoveries of science were meant by God to help humans better to understand the very word of God in the Bible where this deals with the structure of nature:

In questions of nature which are not matters of faith it is first to be considered whether anything is demonstrated beyond doubt or known by sense-experience, or whether such knowledge or proof is possible; if it is, then, being the gift of God, it ought to be applied to find out the true senses of the holy Scripture in those passages which superficially might seem to declare differently.<sup>44</sup>

As a result the answer to the objection under consideration is clear: the Christic origination of science does not mortify but rather intensifies the humanity of science and its creativity. For Christ does not make scientific research superfluous for his followers demanding of them that they learn from the Bible what they can learn through the use of their faculties. Rather, he educates them creatively to use their faculties with autonomy relative to the Bible, an autonomy which even leads to a better understanding of the Bible itself.

To sum up we can define more precisely the Christic origination of science as *the humanizing activity of Christ toward science*. For Christ's mission was to enable people to actualize their God-given dignity and not, properly speaking, to make them scientific. However, by carrying out his mission Christ could not avoid making his followers able to produce science on their own. Thus Christ did indeed originate science, but indirectly and mediately, as we have seen. In other words, Christ originates science as a signal, yet only

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43. *Ibid.*, p. 183-4.

44. *Ibid.*, p. 199.

partial or peripheral, result of his overall formative-educational activity relative to humankind.

Indeed, Christ formed the human being anew or recreated him (cf. 2 Cor. 5:17). In particular, Christ gave the human being a new heart and consequently a new mind, like his own: 'We have the mind of Christ' (1 Cor. 2:16). Also, Christ associated all human beings to himself in fulfilling God's plan with regard to the totality of his creation. Accordingly, Christ continually educates his followers—through illumination, encouragement, warning and consolation—to cooperate with him in fulfilling the plan of God. But science falls within this divine plan. For God already at the beginning wanted humans to work not only physically but also intellectually as his representatives vis-à-vis the remainder of his creation (cf. Gen. 2:15, 19; Gen. 1:26). Christ, then, gave new emphasis to this work when he disclosed that all things originated from him, as the creative Word of the Father, and were intended for him, as the Father-appointed king of the universe. Accordingly, the followers of Christ could not help but feel stimulated by him to wholly involve themselves with nature as not just a gift but also a task from God demanding the engagement of their entire personality. Thus, in the execution of this engagement, they first developed the humanistic presuppositions of science and then originated science itself.

### III. Conclusions and Implications for Christians and Scientists

What message should we, Christians and scientists, extract from the Christian origination of science? Here are a few suggestions.

1. *There is no automatic connection between the discipleship of Christ and science.* Since Christ originated science only indirectly and through the mediation of his followers, it is always possible to be a Christian and not realize the relationship of Christ to science. Thus, for instance, Byzantine Christianity did not give rise to science; also, many Western Christians never cordially welcomed science. On the other hand, since Christ originated science through his human followers, it is always possible for other humans to do science without being themselves disciples of Christ and even without reference to Christ.
2. *Science cannot be truly understood without reference to Christ.* Though science can be practiced without reference to Christ, it is obviously necessary to refer it to Christ in order to grasp its humanistic genuineness. For science ultimately stems from Christ via its humanistic presuppositions inspired and motivated by him.
3. *Science is undermined by the cultural rejection of Christ.* Though

science can be practiced without reference to Christ, it needs to remain faithful to its Christ-caused humanistic presuppositions to thrive and even to survive. Hence the cultural rejection of Christ undermines science. Sadly, but predictably, examples multiply in our post-Christian culture to prove that this is indeed the case. For instance, some quantum physicists now spurn the intrinsic intelligibility of nature and take pride in advocating 'the chaos behind the law'.<sup>45</sup> Other scientists scoff at the inherent 'rewardingness' of the intellectual exploration of nature, as for instance the Nobel Prize winner Steven Weinberg: 'The more the universe seems comprehensible, the more it also seems pointless.'<sup>46</sup> Still other scientists make science a positive instrument of theoretical dehumanization; e.g., Carl Sagan: 'I am a collection of water, calcium and organic molecules called Carl Sagan . . . Is there nothing here but molecules? Some people find this idea somehow demeaning to human dignity. For myself, I find it elevating . . .'<sup>47</sup>

4. *Christians have a great responsibility concerning science.* Since Christ originated science through his followers, he obviously expects them to be responsible for the preservation of the genuineness of science, theoretical and practical. Thus Christians should thank God for his gift of science through Christ, and repent of their failings which have scandalized many over the centuries into concluding that Christianity and science are incompatible. Christians should make scientists feel spiritually at home in the Church. Moreover, Christians should appreciate and encourage the efforts of many scientists to be faithful to their calling, especially with regard to the central concerns and aspirations of contemporary humankind, such as the quests for development, peace and education.

5. *Christian scientists have unique leadership tasks.* Though all followers of Christ are responsible for the genuineness of science intended by Christ, it is up to Christian scientists to take the lead in this regard. They should do so inside the Church, inside their professions and inside society at large. Inside the Church, they should help their fellow Christians effectively discharge their great responsibility concerning science. Inside their professions, they should illuminate and encourage their students and colleagues about

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45. John A. Wheeler, 'On Recognizing "Law Without Law" in *American Journal of Physics* 51 (1983), pp. 398-404. See also, along the same subjective lines, the widely acclaimed book by the physicist Heinz R. Pagels, *The Cosmic Code: Quantum Physics as the Language of Nature* (New York: Bantam Books, 1983).

46. Steven Weinberg, *The First Three Minutes: A Modern View of the Origin of the Universe* (New York: Bantam Books, 1979), p. 144.

47. In *Time*; Oct.30, 1980, p. 68.

the humanistic presuppositions of science; in particular, they should prove through their example that scientists can and should actualize their human dignity through their science and not in spite of it. Inside society at large, they should educate the public, especially the young, about what science is meant to be by God in Christ; also, they should strengthen all efforts aimed at making science genuinely beneficial to the needy, for science can do increasingly much to relieve the wants of Christ (cf. Matt. 25:34-40). In short, they should do whatever possible to keep science faithful to its Christic origination as a chief means to glorify God and to humanize people.

6. *The Christic origination of science should move Christians to recognize, respect and cooperate with all cultural traditions, notably Judaism.* For if Christ himself ultimately gave rise to science, he did so by operating not in a cultural vacuum but rather in a cultural plenum. In effect, science only started when the contributions of many non-Christian cultures were available: the arithmetic and geometry of the Indians, Egyptians, Babylonians, Greeks, Arabs, etc.; the technology of the Chinese, Greeks, Romans, etc.; the logic and philosophy of the Greeks, Arabs, Persians, Jews, etc.; the observational patrimony and the scholarly traditions of most nations on earth. Thus the influence of Christ on the origin of science was clearly a spirit of recognition, respect and cooperation vis-à-vis all cultural traditions as valuable, if imperfect, responses, to the self-manifestation and communication of God to humans through the intelligibility of the cosmos. As a consequence, since in our time more than ever science develops through the efforts of people of all cultures, it is obviously the duty of Christians to recognize, respect and cooperate with all cultural traditions, thus better to fulfill the plan of God in Christ for humankind as a whole.

Special consideration is due to Judaism for two main reasons. First, ancient Judaism bequeathed to Christianity the conviction which, as history and philosophy disclose, was the indispensable presupposition for the live birth of science—namely, the awareness of the creation of the cosmos by God through his word. For only starting from this conviction could Christians give rise to science, having realized that the word of God was a personal and incarnate one, Jesus Christ the very Son of God, who invited them to see the cosmos as a personal self-manifestation and communication of God to them. Second, modern Judaism excels as no other cultural group in the area of scientific creativity, and this clearly because of its religious tradition of the creation of the cosmos by the divine word.

Accordingly, for the sake of Christ the originator of science, Christians should gladly work with representatives of all cultures to

make science one of the main agencies for the fostering of human dignity in our time instead of allowing it to become a major threat to the same.

# **THE PAGAN TEMPTATION**

**Thomas Molnar**

Humankind has a basic need to discover meaning in the world. This need, says Thomas Molnar, can be satisfied not through the exercise of reason but only through myth and symbol, which mediate the transcendent to the human level.

Originally constituent elements in the Christian worldview, myth and symbol were gradually rejected as the church began to emphasize instead the power of rational thought. Through the exercise of reason, a 'rationalistic' Christianity can discover some truth, but this is never sufficient to lead one to assent in faith to the redeeming God above. Rather, it merely pushes the frontier of the unknown farther away. In the face of a rationalized and demythologized Christianity, many have sought alternate myths and symbols to understand the world. This is the pagan temptation.

There has been a continuous pagan influence through Christian history. In the twentieth century it is especially pervasive, as many Westerners turn from Christianity to seek meaning in pagan myth and in the new occult. The only way to counter the pagan temptation, says Molnar, is to restore myth and symbol to a vital role in the faith.

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Walbert Bühlmann *The Church of the Future—a model for the year 2000*, St. Paul publications, 1986. 207pp. Paperback. £6.95

We are familiar with Fr. Bühlmann's central thesis from his earlier book *The Coming of the Third Church*. The first thousand years of Christian history belong to the Eastern Church and the second thousand to the Western Church. The third thousand years will be truly a universal church but with the main inspiration and leadership coming from the Southern Church. That thesis is re-stated and developed in this book. But to it is added a tantalizing look at what that Third Church might be like. Fr. Bühlmann was for many years a missionary and all his writing speaks of his commitment to the centrality of the Mission of God in the world. From this rediscovered emphasis during Vatican II, Roman Catholics have restated their ideas of the mission of the church and found common ground with those of other traditions.

The book's starting point is an examination of the task facing the Third Church. By 2000 there will be 4 billion people who will not have heard the name of Christ. The majority of those will live either in the poorest parts of the world or in the poorest parts of traditionally-Christian countries. The old argument between preaching good news to the poor or to the lost is now irrelevant; by and large they are the same people. From that perspective Bühlmann analyses the history of Catholic missions in the three Southern continents of Latin America, Africa and Asia. He draws out many of the themes current in mission

studies. None of this is new, but the book is a bargain just to have so much set down so clearly in five short chapters. It is important for those of us who are not Roman Catholics to have this distinctive analysis.

The book's new material is in Part 2: *Prototypes for the Year 2000*. He marries the theological insight of the church as The People of God to the pastoral necessities of a church with so few priests or trained leaders. On that basis he sees the emergence of a church of the people, less dependent on structures or leaders from outside. The centre of gravity of the church will shift from institutions to the people themselves. This process of decentralization has important implications for Protestants and it is a pity that Bühlmann does not address us in this book. Protestant Missions who wield such power in the Third world through money and personnel will also have to learn to give over that power. Bühlmann sees all these trends leading to a church that has greater local variety and therefore is anomalous and untidy. If it is allowed to do so, the Southern church will teach the Northern church to depend more on God and less on systems.

I have two reservations. First as I have said Fr. Bühlmann has stayed too firmly within his Roman Catholic history and so failed to challenge the rest of us. Secondly my knowledge of seventeenth century Baptists does not encourage me to believe that a church of the people is any less sinful than a church of the powerful; green-grocers can be as tyrannous as cardinals. The basic church which Bühlmann hopes will emerge will, I fear, be the same mixture of saints

and sinners.

But the book is always stimulating, the thesis is an important one, and the price very reasonable.

JOHN MATTHEWS

Peter Mullen, *The New Babel*, SPCK, 1987. 120pp. Paperback. £2.50

Peter Mullen's 'New Babel' is the world in which we live—contemporary society. His aim is 'to make accurate criticism of contemporary life, and also to suggest a way in which our cultural life can be restored, our communality re-created, and our faith re-kindled'. He certainly succeeds in the first part of his intention. He is a lively writer, with a fine command of English. He airs his own prejudices with gusto, taking powerful swipes at institutions and ceremonies with a nice sense of wit and humour (grey to black!).

The Church is 'no longer *the* Church, but only a sect—one more club among society's infinite number of clubs and pressure groups'. He pulls no punches in, for instance, comparing the 'beautiful language' of the Book of Common Prayer with the limp prose of the A.S.B. The new Marriage service, the language of the present funeral service and the alternative Eucharistic prayers get equally-handled rough treatment. Charismatic revival comes in for a devastating broadside. 'Babel in the secular city' deals trenchantly with the fragmentation of Western culture. There is much that is perceptive here, on T.V., cremation services, British pubs, the press, and religious education in schools.

In the following chapter, 'Faith in the Age of Technology', Mullen handles the same theme as Bishop

Lesslie Newbigin deals with in his recent book *Foolishness to the Greeks* (SPCK). These are the problems represented by modern science, which so dominates Western thinking, and by the social structures and political practices which characterize the Western way of life. Both authors agree on the increasing fragmentation, but Newbigin's is the deeper analysis of what must be done if the Church is to meet its challenges.

Mullen is not wholly convincing in his attempt to show how we can recover our cultural tradition through the masterpieces of literature, art and music, and above all through the story of Christ. One is left with the suspicion that his main purpose is to restore the Authorized Version of the Bible, and the Book of Common Prayer to a position of absolute eminence. Then, all would be well . . . but would it?

Please read *The New Babel*. Once started, you will want to finish it, and you will either enjoy, or at least be stimulated by the author's strong and definite views, put across so persuasively and wittily. But then work out your own solutions to the problems of *The New Babel*.

W. A. HAYWOOD

Robert M. Grant, *Gods and the One God; Christian Theology in the Graeco-Roman World*, London: SPCK, 1986. 211pp. Paperback. £6.95

This book is intended to be a popular presentation of how the Christian understanding of God developed in the first five centuries. For all that this book is written for the non-specialist, it contains a wealth of detail and a plausible thesis of its own. Professor

Grant succeeds in making available in a very readable form both the fruit of his own research and also that of a whole generation of students of the New Testament and early Christianity.

Professor Grant's main thesis is that from the outset a great variety of ideas and, more importantly, religious practices influenced the diverse formulations of the emerging Christian doctrine of God. Chief amongst those influences are the contemporary Jewish notions of God, the concepts of Platonism, and the religious milieu of the eastern Mediterranean. All these may seem to be the obvious categories that should be discussed in undertaking the task that this book represents, but each is presented in a fresh and stimulating manner. Suggestively Grant has no completely separate section for Judaism. Thereby he puts Judaism in perspective as a minority religion in the Mediterranean world. Furthermore, he asserts justifiably that Judaism, like early Christianity and a whole host of forms of paganism, had no clear orthodoxy or heresy. This rightly reflects the general conclusion of a great scholarly debate that has only recently been concluded. Some Jews clearly thought in more pluralistic terms about God than later orthodoxies could allow. But despite such pluralism, Judaism's peculiar conceptualization of God is seen to rest consistently in its unique attitude to images; the dependent Christian exclusion of images resulted in many pagans caricaturing Christians as godless.

For the pagan world Grant has as comprehensive a discussion of a variety of religious groups as his format will allow. Strikingly he pre-

sents the interaction of a number of pagan religious traditions as the key to much of the development of theology in early Christianity. Such fertile interaction as that between Egyptian and Roman traditions, or that reflected in the writings of the late second century orator Aelius Aristides, enabled many to appreciate what Christianity was trying to assert about God at the same time as encouraging Christianity to borrow and transform concepts for its own ends. Grant upholds the pagan Numenius as a prime example of a philosopher whose thought was a bridge between Neoplatonism and Christianity; his understanding of the divine triad shows how he could borrow from and influence both Neoplatonism's engagement with Pythagorean ideas and Christianity's nascent thoughts on the Trinity. Moreover in all this Grant reflects much recent scholarship which has turned from a merely formal ontological description of God and the gods towards a more functional appreciation of them; the book has up to date sections on the functions of gods and goddesses and on the narratives of their deeds.

This approach to pagan religions is reflected also in Grant's treatment of early Christianity. He asserts that the difficulties that early Christians had in coming to express their beliefs about God and his action in the world in and through Jesus were the result of there being no single understanding of how the cross worked and few explicit clues in the words and deeds of Jesus about Jesus himself. The Christian experience of redemption and the accompanying promise of salvation were capable of being expressed in a

multiplicity of ways; doctrine could only be formulated out of shared experience. Thus Grant's picture is not one of a uniform starting point in Jesus from which early Christians tended to be diverted by a barrage of other ideas. Rather, the diversity of experience from the earliest times accounted for the wealth of Christian views about God, the creativity of which was the hallmark of the intrinsic value of Christianity until the politicization of the fourth century led to a doctrinal uniformity imposed with patchy success. However, more important than seeing the creeds as normative doctrine is Grant's description of credal formulations belonging first and foremost in liturgical settings so that it is the church's corporate experience in worship which most clearly expresses its understanding of God, Christ and the Holy Spirit.

There is much apt quotation from primary sources in this book; apart from the concluding reading lists there is little explicit allusion to modern scholarship. Nevertheless the reader can rest assured that a lifetime of learning lies behind this volume, a learning which is modern without being faddish, and which is to be found as much in the subtlety of the author's own phraseology as in his choice of topics. It is a rare delight to find a book which is both a popular volume and also a contribution to scholarship in its own right.

GEORGE BROOKE

Wayne Meeks, *The Moral World of the First Christians*, SPCK, 1986. 182pp. Paperback. £6.95

All of us are conditioned in many ways by the family and the social

group or community into which we are born. From our original matrix, we develop, through experience and inner capacity, into the distinct persons which we become. Is this true for a community or an institution? In particular, to what extent were the moral ideals of the early Christian community inherited? How far were they modified to become unique in their form?

Professor Meeks seeks to explore the ethical traditions of Greece, Rome and Israel to discover the extent to which the early Christian communities absorbed the ethical norms of the Graeco-Roman and Judaic worlds, into which they came. He gives special attention to the city (polis) in Greece, which served as the context for Greek ethics and then shows the extent to which their ethical norms came under severe strain as the Roman Empire expanded. The writer has skilfully condensed a great amount of scholarship into a comparatively small compass to provide representative examples of the philosophical and moral teachers of Greece, Rome and Israel to illustrate his theme.

The social background of the various communities and the stratification of the Empire are briefly considered, particularly in their urban setting. The treatment of the rural communities is very sketchy. It is however with the urban communities that the Christian Church has most contact, so the focus has of necessity to be turned towards the rise of urban Christian communities. These are described as developments from a Messianic sect in Israel into household associations in the 'cities'. Fine consideration is given to the place of households in the

growth of the Church, whilst recognition is given to the variety of the social circles and of local situations, which played a significant part in the developing behaviour patterns of church members.

With regard to the behaviour patterns, an important emphasis is given to the way in which, in Christian circles, moral patterns in action were closely linked with religious belief, in contrast to other contemporary religious cults where this did not happen. To illustrate this point, the writer examines some representative New Testament passages—Pauline and Gospel—which highlight moral guidance by a variety of methods. This is further re-enforced by interesting material from the Didache and from Irenaeus. There are a few less felicitous terms, such as 'ethicists' and 'theonomous', but this book can serve as a useful guide to study the roots of the moral patterns of the early Christian communities.

JOHN H. CHAMBERLAYNE

W. Oddie (ed.), *After the Deluge: Essays Towards the Desecularization of the Church*, SPCK, 193pp. £6.95

The fundamental contention which underlies this book is well summed up by the old adage of Dean Inge that, 'The Church which is married to the Spirit of this Age will be a widow in the next'. If the essayists are right, then the bereavement process has already begun in earnest! All but one of the contributors would place themselves squarely within the Anglo-Catholic tradition of the Church of England, and consequently the presentation of much of the material is coloured in two important respects: firstly, what is

said occurs from within a distinctively Anglican perspective, and secondly, the influence of Keble, Pusey and Newman is never far beneath the surface at a number of decisive points throughout the volume.

The book begins and ends with two impressive essays. William Oddie's introduction is conveyed with tremendous clarity and erudition as he presents the 'Hidden Crisis', his term for the present dire situation as exists within the Church, resulting from a long process of secularization. However, there is no room for reactionary scaremongering here, for the analysis offered by Oddie and the others is but the first step in an attempt to, 'regain a prophetic theology not as a regressive assertion of old intellectual formulations, but a discovery . . . of how the Christian revelation . . . given by God, always dynamic, unchanging in its essence, endless in its implications for every conceivable human culture and historical circumstance, will transform human understanding of the new age into which civilization is now moving' (p. 30). The final paper by the Bishop of London, Graham Leonard shows how this actually applies in the area of social/political concern, such that when set free from bondage to any ideology of either the politically left or right, the social dimension of the Gospel takes on a new power so long as it is based upon *Christian* doctrine, and especially the need for grace.

However, in between these two notable works by Dr. Oddie and Dr. Leonard, we find the proverbial 'curate's egg', that which is good in parts but not so good in others. For the 'not so good' there is a paper by

Wayne Hankey on 'The Bible in a Post-Critical Age' and 'Christianity and the Passing Age' by James Munson. Dr. Hankey is at pains to show how presuppositions were largely responsible for the 'assured results of Higher Criticism' rather than anything which lay within the biblical texts themselves. Now, while not wishing to play down the place of presuppositions in this or any other field of enquiry, it surely stretches credulity to the limit to maintain, as Dr. Hankey does, that the whole of Wellhausen's Documentary Hypothesis regarding the Pentateuch can be dismissed solely on the grounds of Wellhausen's 'existential prejudice'.

Neither is Dr. Hankey's scholarly credibility enhanced by his wildly-inaccurate assertion that Karl Barth's theology is 'existentialist in the Heideggerian sense' (p. 72). Certainly the early Barth was influenced by Heidegger, and more so by Kierkegaard, but after his 'well known false start' of *Christian Dogmatics*, that influence decreased considerably. Has Dr. Hankey never read the correspondence between Barth (who was not an Heideggerian existentialist) and Bultmann (who was) to see the great gulf that existed between them? And to claim that for Barth, 'It is impossible in principle and incomprehensible in fact that man should hear God' (p. 72) is simply not true, for according to Barth it is God himself who creates this 'impossible possibility', and one is left wondering whether Dr. Hankey has actually considered Barth at first hand. A final criticism of what started off as a promising paper, is that nowhere is the monumental influence of Troeltsch even mentioned,

which is a most serious omission indeed.

By way of contrast in style, James Munson's piece is in a more racey journalistic vein, and he obviously has no qualms about the need to hide his likes and dislikes. (For example: Nonconformists seem to act as a convenient 'whipping boy' for Munson as he sees them as very much the villains of the piece in the 19th century march towards secularization). But given the present state of affairs how is the good old C of E to respond? Well, according to Munson, it ought to behave like the Queen (!) in keeping out of 'political matters' but leading the way on questions of 'morality'. However, this begs the obvious question as to whether such a separation between the two is either possible or desirable. Moreover, for the Church to concern itself with 'morality' (private?) over and against 'politics' is for all intents and purposes to capitulate to the secularization process, the very thing Munson has been arguing against in his essay.

More positively Peter Hodgson provides the reader with some excellent food for thought in his paper on 'The Desecularization of Science', showing how modern science is indebted to Christianity in providing the epistemological base for its successful launching, and rightly raises the question of how long it can continue without that base. His sections on scientific realism and creation and cosmology are first-rate as they are placed firmly within a biblical theistic perspective. The Evangelical contribution to the collection comes from Roger Beckwith with a helpful survey of the biblical concept of 'wisdom'. While

this is strong on exegesis, it is sadly weak in application.

The overall thesis concerning the all-pervasive influence of secularization and the need to reverse this is a sound one, requiring serious consideration by all those who would own Christ as Lord. However, the strength of the case presented varies between the writers making for a rather uneven book, satisfying in parts but frustrating in others.

MELVIN TINKER

David L. Edwards, *The Futures of Christianity*, Hodder and Stoughton, 1987. 479pp. £16.95

The Provost of Southwark has produced a masterly survey of the fortunes of Christianity. His latest book is packed with information and illuminated by insights which are the result of study, travel, research and hard thinking. Basic to the whole approach in this book is the conviction that Christianity has a future, or rather, as the title signifies, many futures, for Christianity is now a global religion. It has taken root in many different cultures, so one can rightly speak of the future of Indian Christianity, or African, American, or British Christianity. The pattern of future Christianity is to be full of diversity, as are its present expressions.

But what of the goal of Christian unity? The false idea that unity means some kind of dull uniformity is made to look ridiculous by the author's detailed exposition of the vision of what a reconciled church will look like; 'I conclude that belief in God through Jesus . . . is likely to inspire Christians both to respect the diversity which God blesses and to

seek the communion which is commanded by love.'

The opening chapter asserts that Christianity is a young faith: 'What's past is prologue'. If our Christian past measures about 2,000 years, how long is the future to be—a million, ten million years? The story so far is staggering enough: 1,500,000 Christian congregations served by 3,750,000 full-time workers, a corporate income of £50,000 million a year, distributing 43 million bibles annually, and more than 20,000 denominations.

After a survey of the origins and development of the Christian religion there is a chapter on the particular experience of the Anglican communion; it is a frank appraisal of the Church the author knows best and deeply loves. He quotes Michael Ramsey's judgement that the Anglican communion is sent 'by its very brokenness to point to the universal church wherein all have died'.

Subsequent chapters survey the expressions of Christian faith in America, Africa and India, amid Asia's faiths, and in secular Europe. Here are pages full of vivid detail, to be dipped into again and again. The phenomenal growth of Christian allegiance in Africa, and less spectacularly in India, is noted. Yet these increases must be set against the background of vast population increase. An expanding Christian community becomes none-the-less a diminishing percentage of the total world family; eight Indians in every ten are Hindus. Moreover there are the new religions—so many in Japan that a book on the subject could be entitled 'The Rush Hour of the Gods'.

The final chapter seeks, against this enormously variegated back-

ground, to address the subject of Christianity tomorrow. Here, all-too-briefly, David Edwards raises the question of peace. This is a vital issue in a world that now has the capacity to destroy itself utterly so that there would be no future for anyone. But the division of Christians into 'realists' and pacifists is scarcely how many see the state of the debate about peace and war within the churches. And in spite of its eirenic intentions, the statement about pacifists that 'their purity keeps clean the conversation which Christian "realists" attempt to hold with the leaders of an armed world' would surely not accord with the way most pacifists conceive their vocation.

In the same chapter there are illuminating commentaries on a variety of issues, such as Christian attitudes to the poor and to women. The sections on the emerging Catholicism and the Evangelical future should be read by all who are concerned about the ecumenical movement and the direction it should take. Altogether an admirable guide from one who, though immersed in the complexities of the present, is able clearly to discern the goals towards which we should be moving.

KENNETH G. GREET

Howard J. Van Till, *The Fourth Day*, Eerdmans/Paternoster, 1986. 268pp. Paperback. £8.85

There has been a spate of books recently dealing with the relationship between science and the Bible, and specifically between creation and evolution. Most of these have emanated from the fundamentalist creationist camp. This book is different, not only because it is highly

critical of that brand of creationism, but because it seeks to show that the Bible has nothing to say about the process of creation but everything to say about the wider issue of the status of the cosmos. The author encourages us to take both the Bible and the cosmos seriously and divides the book into three sections; the Biblical View, the Scientific View and Integrating the Two Views. He contrasts the outlook of the Bible with that of other ancient cultures like Mesopotamia and Egypt which regarded the celestial bodies as deities. In the Bible God not only creates the universe but its continued existence is seen as totally dependent on Him.

Van Till is a professor of physics and astronomy, and this is clearly evident in the second section of the book where he gives an excellent summary, from a Christian point of view, of the present state of astronomy. He argues that astronomy, like all science, is an autonomous discipline explicable in terms of its own laws, but equally that these laws are not prescriptive of nature but rather are descriptive laws of God for nature. He accepts evolution, which he believes illustrates the coherence of nature, and hence shows that God does not act capriciously. Rather than saying that evolution is God's method of creation he prefers to see it as an 'expression of His strategy', the course of cosmic history being the consequence of God's providential activity. He has scathing words for so-called 'scientific creationism'. He says it is 'a syncretistic assembly of unwarranted assumptions, inconclusive argumentation, capricious rejection of unfavourable theoretical principles, and the cavalier selection

of favourable data—all dedicated to the verification of preconceived conclusions.'

The weakest part of the study is the first. He maintains that Gen. 1 has nothing to say about the order or time of creation and hence cannot conflict with science. He adopts the views of Meredith Kline that the Bible constitutes a covenant canon modelled on the suzerainty treaties of the Ancient Near East, and places the early chapters of Genesis in the context of a historical prologue to such a treaty. It is concerned not with the creation but with the Creator answering questions regarding His nature and status. It emphasizes that the stars are created and not deities in their own right. Similarly the seven day chronology is not to be taken literally—it is just the packaging, not the real message. It is difficult to see why, if this is so, that we have a seven-day sequence and a detailed account of what is supposed to have taken place on each day. Surely it is possible to accept the general thesis of Kline that the O.T. as a whole, or more likely portions like Deuteronomy, constitute a covenantal treaty without the corollary about the opening chapters of Genesis? Another minor criticism is that the style is verbose and repetitive and somewhat irksome to read.

R. S. LUHMAN

C. Stephen Evans, *The Quest for Faith*, IVP, 1986. 143pp. Paperback. \$4.95 (£3.95)

Professor Evans has already established himself as a Christian popularizer of philosophy. This book, however, is not just a simplified

version of his 'Philosophy of Religion' but is intended specifically to present a rational case for Christianity to the intelligent young agnostic.

Opening chapters follow the usual pattern with the author seeking to build up a case by accumulating evidence sufficient to satisfy a reasonable person. He points to the clues for God's reality in cosmic wonder (the cosmological argument) and the existence of purposive order (the teleological argument). Then follows sections dealing with the moral argument, the mystery of personality and the incarnation which is presented as God being the divine suitor in a true cosmic 'fairy tale'.

There follows an apologetic commending Christianity as the most rational of the religions with God revealing Himself solely and decisively in Jesus, whose miracles give evidence of his divinity. Further chapters give a sketchy account of the problem of suffering and a brief rebuttal of the Freudian and Marxist critiques of religion. The author ends with an appeal to the reader. Christianity is both simple and profound. It is simple because it is easy to respond to in faith, but is profound because it ends in mystery. If the reader is prepared to act on a commitment he will find that not only will doubts be resolved but he will be able honestly to test that commitment.

The volume is like the proverbial curate's egg. The early chapters present a concise and convincing case for theism, but I am doubtful if an agnostic will be persuaded to adopt Christianity in preference to another religion on the basis of the arguments presented here. Perhaps the basic deficiency is that the author

has attempted too much in such a short study.

R. S. LUHMAN

R. Hanbury Brown, *The Wisdom of Science: its relevance to culture & religion*, University Press: Cambridge, 1986. 194pp. Paperback. £6.95

The author, who is Professor of Astronomy at the University of Sydney, has set out to write a book for the layman, showing how science has revolutionized our understanding of the nature of the world in which we live. He states in the preface that the inspiration behind its writing came from the questions of people who visited the Narrabri Observatory in New South Wales where he once worked. His approach is to start by making a distinction between two components in the popular understanding of modern science—the first being the way it has contributed towards material well-being (of which most people are well aware) and the second being the transformation modern science has brought about in the way we are to understand the nature of the universe in which we live (of which, Professor Hanbury Brown believes, many people are largely unaware). These two factors are treated in the two opening chapters. The first, 'Changing the World', shows how science has become allied with industry and government to bring about the sorts of technological changes which have affected everyday life. He notes that there have been undesirable effects to all this, notably in the high proportions of money, effort and manpower which have been devoted to

weapons research. This, however, is really only clearing the way for the second chapter, 'Interpreting the World', in which he shows how science has swept away the old medieval models of the world which were the product of philosophy and theology. Many centuries are covered in some sixty pages, and the topics range from atomic and quantum physics, through astronomy and sub-atomic particles, to evolution and cell biology. The conclusion is that rigid determinism is to be rejected, and we are left with a universe 'much vaster, more abundant and more wonderful than anyone could ever have imagined' (p. 100).

All this has been dealt with in other books; the best chapter is the third, in which Professor Hanbury Brown discusses 'The Cultural Dimension to Science'. He argues rightly that science is NOT value-free, but takes place in a social context in which human beings choose how to use new knowledge and who also make decisions about what kinds of research to fund or not. He argues strongly that basic research needs to be generously funded, and he is concerned by the current trend increasingly to fund research whose technological benefits can be clearly seen.

The final chapter, 'The religious dimension to science', is extremely disappointing. It amounts to little more than a diatribe against fundamentalists (a term loosely and inaccurately used to include all Christians who believe in the authority and inspiration of the Bible—though he is hardly unique in this use of the term). This is totally unfair to those evangelical Christians who are

scientists and who are wrestling with the problems of science and faith; but I suspect that the author knows little or nothing of such work. What about the Research Scientists Christian Fellowship, who were awarded the 1986 Templeton Prize for progress in the understanding of religion? Or what about the work of the late Professor Donald Mackay? In this chapter Professor Hanbury Brown repeatedly urges the churches to reformulate their doctrines in ways which are compatible with modern science but, in spite of warnings against reductionism in previous chapters, that is precisely what he has in mind here. All we are left with is a loosely-defined concept of 'mystery', but apparently emptied of any possibility of a personal God who stands over and apart from the universe He has created; nor is there any room for scriptural inspiration, miracle or resurrection. Not only is the marriage of science and religion ill-defined, but it is vaguely described and I suspect Professor Hanbury Brown is unsure of himself here. For example, on p. 184, we read 'Indeed the Churches would do well to view the remarkable new understanding of nature which science has brought, not as an attack on religion, but as an assurance that we take part in the nature of God.' In the context of the chapter, it is totally unclear as to what this means; it seems to have no connection with anything which has gone before.

Thus the reading of the book, which this reviewer started upon with great enthusiasm, turned out to be a disappointing experience. Most of the ground is better covered in other books, and the discussion on the religious dimension of science

leaves so much to be desired that, as a contribution to that particular topic, the book cannot be recommended.

RON ELSDON

Del Ratzsch, *Philosophy of Science: The Natural Sciences in Christian Perspective*, Inter-Varsity Press, 1986. 165pp. Paperback. \$6.95, £3.50

This is one of the *Contours of Christian Philosophy* series which are intended to serve as textbooks introductory to different fields of Philosophy. The aim is to evaluate the subject matter, not only as Philosophy, but also in relation to the wider aspects of Christian thought. This book achieves that aim very successfully.

The first few chapters trace the historical development of the philosophy of science, from the traditional (i.e., realist, empiricist, objectivist) view of science, through the influences of positivism, Kuhn, the post-Kuhnian extreme subjectivists, and the critics of these views, to the present-day spectrum of attitudes relating to the scientific enterprise.

Two chapters are then devoted to a consideration of what might be expected of science and what cannot be expected of it. Del Ratzsch argues that science is capable of discovering truths about objective reality, including theoretical concepts relating to matters beyond our powers of observation. Science, however, cannot lay its own foundations, or handle questions of ultimate origin or ultimate purpose.

In the last three chapters the author turns to the relations between science and Christian faith. He maintains that science cannot logically challenge religious belief, and that

Christians have good reasons for encouraging, or participating in, scientific research, subject to certain ethical limitations. Lastly, different views of the relation between science and Christian belief are considered. These range from a strict complementarity (the view that science and the Bible have no mutual contribution to make) to the view that the Bible provides scientific information that must be incorporated into scientific thinking. Ultimately, this is a problem for hermeneutics.

The book, as its title correctly indicates, is about philosophy; and its sub-title could be misleading. It has hardly anything to say about natural sciences—it discusses only what philosophers have thought about the sciences. A reader coming to the book to find answers to questions about astronomy, geology, biology, etc., will be disappointed. It is nevertheless a valuable book, and would be well worth reading for anyone who desires an introduction to modern thought on the nature of scientific activity. The book is very well written, avoids technical jargon, and is easy to read. A possible criticism is that, compared with Kuhn, others who have been, or are, influential in the philosophy of science (e.g. Popper, Lakatos, Feyerabend, Marxist materialists) have received very little attention. Another deficiency is its lack of an index. But these are minor criticisms.

GORDON E. BARNES

A. G. Cairns-Smith, *Seven Clues to the Origin of Life: a Scientific Detective Story*, CUP, 1985. 131pp. Hardback. £9.95.

The author of this fascinating little book is a well-known clay specialist. Here he repeats in popular form the substance of his book published in 1982, *Genetic Takeover and the Mineral Origin of life*.

His theme is that 3 to 4 billion years ago 'life' originated on earth as a consequence of the special replicating properties of inorganic mineral clay crystals, and only at a much later stage did organic (carbon-based) molecules take over. His views are not to be confused with those who suggest that certain clay minerals might act as 'templates', to select biological molecules of the correct configuration (or chirality). Cairns-Smith thinks that early self-replicating systems at the very foot of the evolutionary ladder, were inorganic in their entirety, and that carbon was not involved in these early stages.

The book is well written in an entertaining manner, interspersed with apt quotations from the great fictional detective, Sherlock Holmes. The mystery to be solved is how organic life, which requires large, complex ('high-tech') molecules, could have evolved from small ('low-tech') molecules, as assumed in the middle years of this century, when small molecules such as ammonia and methane were furiously battered with electrical discharges, ultraviolet and X-radiation, to cajole them into being candidates for a pre-biotic soup. Cairns-Smith sees the chemical futility of such methods and believes that the solution to the mystery lies in an entirely novel approach. Early 'life' (for want of a better term) forms were not organic at all, but inorganic, and he uses a number of ingenious arguments to

support his theory. I suspect that many of us have an admiration for iconoclasts, and those interested in the chemical origins of life will find the author's views of great interest.

In the final analysis, however, this reviewer cannot resist the temptation to offer a further quote from Sherlock Holmes ('The Hound of the Baskervilles'):

'Surely we have a case.'

'Not a shadow of one—only surmise and conjecture . . .'

D. A. BURGESS

Arthur Peacockè, *God and the New Biology*, Dent: London, 1986. 198pp. Hardback. £10.95

It was in 1953 that Watson and Crick first postulated the correct physical structure of the genetic material D.N.A. and opened up the new field of molecular biology. Their discovery was crucial to an understanding of the mechanism of heredity, and the considerable significance of this for evolutionary theory led to a transformation in almost all areas of biological study. Arthur Peacockè in his book *God and the New Biology* examines the implications of these new developments for a Christian understanding of humanity, nature and God, and of their mutual interrelations.

In the first two chapters of his book, Peacockè discusses biological reductionism—the philosophical concept promoted by advances in molecular biology that all biological processes can be explained in terms of physics and chemistry. He then goes on to outline the principal features of the 'new biology', including recent progress and controversies in

evolutionary theory, molecular biology and sociobiology. In the second half of the book Peacockè assesses the theological significance of these scientific developments. He reviews past and present attempts to reconcile evolutionary theory with Christian belief and then discusses how a Christian theology of matter, of the nature of man and of God's activity in the world, conforms with modern scientific thought. Subsequent chapters look at man's role in the created order, the attempts by sociobiologists to provide an evolutionary explanation of morality and the insights which sacramental theology can give to our comprehension of the physical world.

At a time when in popular opinion science and christianity are still widely perceived as in conflict, the constructive conciliatory approach of this book is most welcome. Arthur Peacockè's scientific background as a physical biochemist and his obvious wide reading in relevant areas of philosophy and theology also make him well-qualified as the author. Having said this however, there is a failing that seems almost a consequence of Peacockè's wide reading, in that the first half of the book reads more like a scientific literature review than a book aimed at a more popular readership. In his chapters on reductionism and evolutionary theory, Peacockè summarizes the views of each main contributor to the various current debates, but he does not give enough explanation, criticism or over-view of the arguments for anyone unfamiliar with these subjects to acquire real comprehension of the issues involved.

The second half of the book with its greater theological content is

apparently structured to a much larger extent around Peacocke's own views and I think benefits from greater clarity and coherence of argument because of this. There is much of interest in this section of the book and my only reservation is that his emphasis on the immanence of God and the sacraments sometimes seems a little too close to pantheism. At the end of the book there is an appendix entitled 'Thermodynamics and life'. It is a great relief to have some intelligent discussion of this subject, after the much-publicized, though totally erroneous, oversimplifications of the creationists. It was this appendix, together with the chapters on reductionism, that I personally found most useful, though in both cases I thought that Peacocke's writing made his arguments unnecessarily difficult to follow. In conclusion I would say that *God and the New Biology* provides a most useful study of the theological implications of recent developments in biological science; however an opportunity to clarify some important issues for the general reader was lost.

BARRIE BRITTON

Robert Shapiro, *Origins*, William Heinemann Ltd., 1986. 332pp. Hardback. £12.95

The subtitle of this book is 'A sceptics guide to the creation of life on Earth', which is remarkably accurate, as Robert Shapiro, professor of chemistry at New York, provides a critical, readable and at times amusing survey both of the theories that have been propounded in the past to account for the origin of life and

those in contention and conflict today. Frequent anecdotes and everyday analogies enliven the text as Shapiro leads the explorer to consider not just a particular scientific issue but also the nature of science itself and, of especial interest to readers of this journal, the relationship between science and religion.

First, the groundwork is done. On the theoretical side this involves an analysis of the methods and hence limits of science. Following moderately and undogmatically behind Popper and Kuhn, Shapiro emphasizes the importance of a sceptical attitude and discusses how particular theories are refuted, while being located within a more stable set of broader explanatory concepts which link an entire field—a paradigm. Beyond the limits of science, the area of doubt, lies religion, the area of certainty, characterized by myths which are seen as authoritative accounts of facts immune from questioning. To be fair to Shapiro it must be said that he nowhere depreciates religion, rather seeing it as a source of meaning for human beings. His view of the relationship between science and religion, however, seems to owe more to a desire to invert the popular misrepresentation of science as the source of certain knowledge and religion as the area of doubt, disagreement and uncertainty than to a deep understanding of the nature of religion. Throughout the book Shapiro the sceptic excels at identifying theories and views that are no longer scientific but, in his sense, religious. These are perhaps better described as metaphysical presuppositions or psychological fixations than myths. To be sure such

views occur within religion, but hardly characterize it.

Next come two chapters setting the empirical scene. Shapiro describes the biochemical nature of life as we understand it today, introducing the protagonists that will appear time and again throughout the book, proteins, amino acids, RNA, DNA, a reducing atmosphere, to mention but a few. There follows an account of the historical record of life on earth including a discussion of the various dating methods. Due regard is given to the limits and ambiguities inherent in such investigations. The evolutionary trail is traced back to approximately 3.5 billion years ago, before which the need for speculative models is acknowledged.

For Shapiro the current situation is centred around the questioning and defence of the paradigm that has held sway for the last half century, the Oparin-Haldane hypothesis. He deploys his theoretical framework of science and myth and his biochemical expertise to categorise and criticize the variety of views that are seeking to replace the earlier ideas of self-replicating DNA arising in a primordial 'soup'. This is the heart of the book and it is here that the sceptic of the subtitle is most fully employed. The famous Miller-Urey experiments in which various chemical 'soups' are exposed to electrical discharges in a reducing atmosphere to produce small quantities of amino acids are deemed to have received unwarranted attention and importance. The odds against life originating through the combination of atoms by chance to form nucleic acids are considered overwhelming. More novel ideas such as the clay based theories of Cairns-Smith are

given a hearing, and judgment reserved. A matched pair of chapters cover two groups who propose an origin for life external to the earth. Hoyle, Wickramasinghe et al. are alleged to be treating their science as religion, whereas the creationists are guilty of trying to pass off religion as science.

Close to the heart of its subject lies the controversy of which came first, nucleic acids or proteins. In life today the situation may be summarized as 'DNA makes RNA makes proteins' and therefore there is a natural reluctance to alter this order in considering early forms of life. The priority of the simpler proteins, however, does not lack supporters, including Shapiro, who eventually produces his own speculation concerning an initial hereditary system based on proteins which evolves and is replaced by RNA and DNA. With one eye on the sceptic he offers an example with an apparently similar structure, the scrapie which seems to have no nucleic acid and causes brain disease in animals and suggests locations, some extraterrestrial, where primitive forms of life might be found.

Shapiro is an excellent guide on his own ground and in his company familiar features appear in a new light, new discoveries are made with ease and enjoyment and further exploration seems most inviting.

K. G. HORSWELL

Robert Schoenfeld, *The Chemist's English*, VCH Verlagsgesellschaft FDR, 1985. 173pp. Boards, \$16.95

I undertook to review this book because I believed it would help me as a practising Editor. Also, being by

training a chemist, I found the title doubly appropriate. I have not been disappointed. The author is the Managing Editor of the Australian Journal of Chemistry, and writes in a very light-hearted style. The publisher's 'blurb' claims 'In this book, that is fun to read, the author proves that scientific English can be fun to write'; I would say 'Amen' to that.

The author refers respectfully, to his illustrious forbears Fowler and Gowers, but goes beyond them in two senses. On the one hand he is of necessity more up-to-date, and on the other, he is writing for the scientist, and particularly for the chemist. Nonetheless, Fowler and Gowers are not superseded, merely extended.

All the traps which beset the writer of a scientific article are here—compound nouns, nouns made into verbs, pendent participles etc. and many more. Each chapter deals with one topic, is brief and to the point and usually starts with a telling example. Metaphor abounds and illustration, which some readers might find a little laboured in places. This reviewer didn't, but what might be more disturbing is the mixing of scientific and illustrative language. For example, in two adjacent examples we read about acetyl and benzyl on the one hand and 'paradigm-many!' on the other. 'Examplamine' is also frequently referred to. However, since the book is entitled 'The Chemist's English', we have been prepared. The penultimate chapter ingeniously analyses an English sentence according to a logical scheme based on metal-ligand bondings. From this, it is proved that a verb such as 'react', because it is intransitive, cannot be cast into a passive

form. That is, 'A was reacted with B' is incorrect, logically. A similar argument is applied to 'reflux' and 'distill'. While this may seem pedantic to some, the logic is inescapable. In fact, the author of this book is liberal in his attitude to our language, always recognizing the necessity of its growth and adaptation.

The book concludes with a good index by which to find one's way to pages dealing with any suspected solecism. A number of such books have been written to assist in the writing of scientific papers, and in editing, but I doubt if a more amusing one exists.

A. B. ROBINS

Fellows of the Calvin Centre for Christian Fellowship, *Responsible Technology*, William B. Eerdmans Publishing Co.: Grand Rapids, Michigan, 1986. 252pp. Paperback. £00.00

This collection of twelve studies by six different authors, unlike many symposia, has an underlying coherence which makes its message both plain and simple. While the clarity and coherence are commendable, the simplicity of the underlying premisses is less satisfying. The thrust of the argument is that modern technology differs from earlier forms in that it is science-based, has a methodological approach and enforces a separation between the designers and fabricators of technological products. Technology, it is asserted, is a human cultural activity different in kind from other such activities in that its aim is to transform the natural creation by the use of tools in order to meet practical ends. Since, by definition, it is a cultural activity it is value laden, not neutral. Further,

technological objects, to a greater or lesser extent, impose upon the user the way in which they are to be used.

From these broad principles the conclusion is drawn that 'the cadence of modern society is set by the beat of the technological drum and that the beat itself is set by a drive for power, for human mastery, apart from the will of God.' In such a society Christians are exiles in a technological Babylon but not slaves to it. Their task is to live by the Christian dynamic and to follow the normative principles which are clearly discernible in the Bible as being the will of God. Such a short summary does not, of course, do justice to the length or profundity of the argument but, at the end of the book, one is still left wondering both what is new and what practical things can be done about the problem anyway.

The first general criticism is that the case for modern technology being different in kind—rather than in scale—from earlier forms is, at best, not proven. The construction of Roman aqueducts, the building of biblical cities and, indeed, the drive for power between the rival technologies of arable and pastoral farming typified by the story of Cain and Abel all appear to fall within the general concept of modern technology as expressed in the book. The abacus and the chariot imposed upon their users the way in which they were to be used just as much as do the computer and the battle tank. The discussion about whether things are different in kind because they differ in scale seldom reaches a satisfying conclusion. Grinding poverty and ostentatious wealth have co-existed through many forms of tech-

nological development, through wind, water, steam and electrical power, each of which in its time could have been regarded as technological revolution. If this is true, Christians—and indeed all men of reverence who have sensed with awe and humility that mankind is not the be-all and end-all of creation—have always lived and will continue to live as exiles in Babylon. They may well conclude that the cultural ethos of their Babylon is not technology but the lust for power for which men can use religion just as effectively as technology in their striving to achieve it.

The second unanswered problem which the book handles by assertion rather than argument is that the normative will of God is discernible during the development of a technological product. But, if the outcome of such development cannot be foreseen how can the will of God be known? If we had known of the devastating effects upon the environment of the use of coal would our forefathers have mined it? And now that we know them should we ban its use? Change of any kind involves benefits to some and disadvantages to others. Its short- and long-term effects often differ and neither are measurable in any meaningful sense. The heart of the problem for this and every age would seem to be how best to manage change within the twin precepts of loving God and loving one's neighbour as oneself. Since change can come about just as much from natural causes as from technology one feels, at the end of twelve chapters and some 250 pages, that the wrong problem has been addressed and, even then, not adequately answered . . .

We are left, as always, with the paradox that for society to manage change responsibly some political force has to attain power. Once that power has been attained it becomes resistant to further change, so the process has to be continually repeated. Solutions are not definitive, never final and their outcome is seldom predictable. To suppose that society's problems can be solved by a mixture of technology and throwing enough money at them is, as the book implies, intellectual and political arrogance of stupefying magnitude. Yet neither can be solved by the affirmation that 'it is as all of us—designers, research scientists, consumers, public policy makers, citizens, fabricators, corporate executives, journalists, scholars and others—seek to love as Christ loved us that we will be able to live in the line of creation and redemption.' It will do little to persuade the reverent agnostic—the ally of whatever culture, colour or creed, with whom we should seek common cause in so many areas of life—that Christians have much of practical value to offer in real-life situations as, for example, deciding when the moment has come to switch off a life support system.

It is the continuing experience of human beings that decisions of mind-stretching complexity, the outcome of which is often unpredictable and which almost invariably will benefit some at the expense of others have to be made on the basis of totally inadequate data. If the normative will of God were always clearly to be seen in such issues then presumably Christians would be of one mind on them. The truth is that in so many matters God is silent and it is a

silence which we cannot explain but only accept. To suppose that we are a chosen people to whom God will always reveal the 'proper' answer to a complex question belies our own experience and suggests a degree of spiritual arrogance on a par with the intellectual arrogance which the book so freely criticizes. We have to walk in faith in the footsteps of a suffering God along a path the end of which we cannot see. In the context of eternity, modern technology is not a problem different in kind from those than mankind has experienced before. Throughout the ages mankind has sought to evade issues by clouding them with discussion of extraneous matters which appear to be of more immediate appeal. The real issue is responsibility, not technology.

COLIN HILL

Peter Elvy, *Buying Time: The Foundations of the Electronic Church*, McCrimmons, 1986. 150pp. Paperback. £3.95

Philip Lee (ed.), *Communication for All: New World Information and Communication Order*, Orbis, 1986. 158pp. Paperback. \$11.95

What is a Christian approach to new communications and information technologies? These two books try to answer this question. But the answers contrast sharply. Elvy's book is a detailed description of the electronic church in the USA and its growing European counterparts. The electronic church phenomenon is based on the assumption that satellite, cable and traditional network television are appropriate media for transmitting the Christian message.

As the title, *Buying Time*, suggests, when TV time is up for sale, Christians may well try to use it. It is hard to avoid the conclusion that a rather affluent Christianity is the kind of image portrayed.

The Lee collection, on the other hand, apart from being far more academic in style, argues (from a predominantly Catholic stance) that the interests of the Christian church in fact coincide with the attempts to achieve a just international communication order. Far from the world of affluent Christianity, this book takes its examples from Africa, India, and Latin America, linking mission with liberation movements. The 'non-material aspirations' which Christians should applaud, and seek through new communications, are 'self-reliance, cultural identity, freedom, independence, respect for human dignity, mutual aid, participation in the reshaping of the environment'.

The Elvy material is more in the news. Oral Roberts' hard times have been reported, in the press; it is well-known that Pat Robertson of the '700 Club' has discussed his intentions to run for the American presidency. But how did Robertson's 'Christian Broadcasting Network' become an international satellite communications and production corporation, America's third-biggest cable network with a potential audience of 27 million? Elvy traces the history of the electronic church to increasing deregulation of American telecommunications, which gave the opportunity to 'buy time' (and also effectively ended the cosy government regulated arrangements which had previously favoured less-Fundamentalist broadcasting).

Elvy raises a number of critical questions for would-be Christian communicators. He suggests that Oral Roberts had 'squared the circle by mass-producing and therefore vulgarizing the healing gifts he claims to possess' (p. 81). He reminds British readers that Lord Reith was at first reluctant to broadcast *anything* on Sunday mornings for fear of drawing people away from their local churches! And despite much complacent talk that 'it could never happen in Britain' Elvy points out that the European Broadcasting Network is already operating, that Harvestime's Restorationist Bryn Jones is working on a 'Word for the World' slot, and that British audiences have done anything but switch off *Dallas* and *Dynasty*.

A generally looser connection between analysis and Christian commitment is evident in the Lee collection, but it too contains some important material and asks searching questions. To what extent do Christians consider the medium of communication, or the kinds of image of Christianity proffered? How far have Christians actively concerned themselves with the distinction between 'vertical, didactic and authoritarian' and 'participatory, dialogical and horizontal' communication? Are the social dimensions of the Good News sometimes drowned by the practical results of 'gospel message' evangelism. The chapters of this book range from an exposure of the oppressive effects of information-broking and -manipulating transnational corporations and of male-dominated media through to case-studies of alternative communications media in poor countries of the world. Needless to say, such

alternatives often sidestep altogether the newest communications technologies, using instead media such as film and radio. There is certainly a need to debate the relevance and practicality of a 'New World Information and Communication Order' such as that proposed by the ill-fated UNESCO. While this book is perhaps insufficiently critical of the *Christian* justification for NWICO, the issues raised are undoubtedly worthy of urgent consideration.

The effect of both these books is to obligate a reconsideration of Christian strategy in the contemporary world. How do the concerns of mission—word and deed—find legitimate expression in the world of new communications technologies? As Robert White rightly says (in the Lee book) 'We need a deep awareness of our distinct Christian cultural identity within a secular technical society.' If we are faithful, he says, we may find ourselves 'gradually evolving a very innovative way of communication not only for giving witness to the gospel but also for contributing to the new communication order developing around us.' (p. 117)

D. LYON

Earl. E. Shelp (ed.), *Theology and Bioethics—Exploring the Foundations and Frontiers*, D. Reidel Publishing Co., 1986. 314pp. Casebound. £34.75

This book is a collection of essays contributed by 19 theologians and philosophers, 17 from American Universities, one from Toronto and one from Oxford. The essays are heavily academic and likely to be largely incomprehensible to those without a

theological or philosophical training. In the epilogue Cobb states 'Those who want to know the implications of Christian faith for specific ethical issues that differ from those of moral philosophy in general, will need to look elsewhere' and this is so. He goes on to argue that perhaps there can be no distinctive Christian contribution in this area but that similar views may be shared by those of many faiths with similar moral teaching. Juergensmeyer expands this further with his discussion 'Doing Ethics in a Plural World' which is an interesting and readable chapter. Hartshorne in 'Scientific and Religious Aspects of Bioethics' uses logic and philosophy rather than specifically Christian teaching to show some of the fallacies in the arguments of the 'Right to Life' movements. The two chapters this reviewer found most understandable and enlightening were that by Hauerwas 'Salvation and Health: why medicine needs the Church' which has a very broad and general approach and 'Contemporary Jewish Bioethics' by Green. He is disappointed by the very cautious and conservative approach of the Jewish ethicists to the exciting new biomedical development and maintains that the response of those in earlier generations to their contemporary dilemmas had been more adventurous and farseeing. We will await such applications from Christian theologians to current biomedical developments.

CAROLINE BERRY

Bernard Palmer (ed.), *Medicine and the Bible*, Paternoster Press: Exeter, 1986. 272pp. Paperback. £7.95

This book completes a planned tri-

ogy of books, the other two being *Decision Making in Medicine* (1979) and the *The Influence of Christians in Medicine* (1984). There are nine authors who each contribute a chapter. As a result it pays the inevitable price of some unevenness in style and more importantly of repetitiousness—for example where the hermeneutics of biblical healing are dealt with by two authors (Hewer and Hurdling). Despite this, the book as a whole has been well edited and preserves a balanced presentation. The subject of leprosy is dealt with separately by the late Dr. Stanley Browne in addition to references in other chapters. Whilst it is now generally accepted that all scriptural descriptions of leprosy may not have been the same as Hanson's Disease, it seems that the possibility cannot be denied with equal certainty. There is a circular argument in that although leprosy was not clearly separated as a clinical entity until 1874 nevertheless Hanson later demonstrated *M. leprae* consistently present in lesions that were by clinical definition leprosy. It is doubtful whether we should assert that ordinary people and healers would not have had the knowledge enabling them to differentiate between the conditions comprised under the term 'lepra'. It seems incredible to claim as does Dr. Weiseman and others that the disease which afflicted Naaman and Gehazi could have been scabies. The emergence of new diseases such as AIDS underlines the need for caution when we project our clinical experience back into retrospective diagnoses of biblical diseases.

Healing is handled exceptionally well by Hurdling, where stress is laid

on biblical exposition rather than the attempt to make the Bible a repository of case histories or proof texts to buttress unanchored thoughts about modern problems'. We are reminded that we need a fresh affirmation of the sovereignty of God and an appreciation of the twin biblical themes of both healing and suffering. Hurdling is not 'anticharismatic' but faces facts and points out the contrast between our limited experience of miracles today with the wonder of Jesus' healing encounters.

The value of all the contributions to this book lie in their acceptance of truth as one—whether it be scriptural or biological. The book divides itself into two, first, a consideration of contemporary moral dilemmas, secondly, the perspective of the doctor as a professional. Perhaps, not surprisingly, the best analysis of the practice of medicine as a profession is given by one of the two non-medical contributors (Hemer). He sees medicine as originally the philanthropic profession, but philanthropic only in the proper sense of the word and where there was no tension between the ethics of the profession and making a living from it. His quotation from Lucian shows that little has changed as regards superstition undermining science. A doctor poured scorn on old superstitions whilst prescribing his drugs and dietary treatment. This was quite compatible with his own account of a bronze statue of Hippocrates which walked and mixed drugs, and also of a resurrection he had experienced. No wonder there is a recurring phrase in the Talmud that 'the best of physicians are destined for Gehenna'. Dr. A. S. Darling deals with the levitical code and the inter-

relation of hygiene and holiness. Dr. D. R. Miller's chapter on the value of human life is largely taken up with the abortion debate. He recognizes the dangers of the 'slippery slope' attitude which starts with a lack of respect for the foetus but nevertheless he sustains aspects of this view in his discussion. When he says that 'legal abortion will never increase our respect for life' he surely engages in unintentional litotes. The consequence he says is that *despite* destroying many thousands of babies thought to be at risk socially the incidence of baby battering continues to rise. Might it not be a case of *because* rather than *despite*. Furthermore, it is of dubious moral consistency to argue that what is wrong for the community may not always be so wrong for the individual. The chapter on homosexuality by Dr. Richard Winter is an excellent presentation of this contentious matter. It is a pity that this was written before the realization of the extent of the AIDS epidemic which has added a new dimension to the problem.

The book concludes with a chapter on conscience and modern medicine by Douglas Jackson. This establishes principles which surely will stand the test of changing circumstances and problems. Professor Sims' contribution on demon possession introduced some fresh air to something which can become a dangerous obsession amongst the neurotic. He links the freedom and light that comes into the spirit through the truth that is in Jesus Christ with the healthy and robust hymnody of John Bunyan. This is an excellent book. It can be read and enjoyed by medical and non-medical alike. I would also like to

think that it will be read with profit by Christian and non-Christian similarly.

D. E. B. POWELL

Rex Gardner, *Healing Miracles—A Doctor Investigates*, Darton, Longman and Todd, 1986. 214pp. Paperback £4.95

Dr. Gardner recognizes that there is no shortage of writing on 'divine healing' but addresses himself to what is claimed to be a dearth of writing directed at the Christian doctor or counsellor. A miracle of healing is defined as the healing of organic disease by means, or at a speed, inexplicable medically and preceded by prayer in the name of Jesus Christ, or alternatively as cures 'for which, apart from the intervention of God, there is no logical explanation'. The necessity for a critical approach is initially accepted so that proof consists of 'cast-iron evidence not susceptible to other explanations'. This requires giving full technical details of clinical histories. The starting ground is that of clinical experience rather than scriptural justification.

The series of case histories that form the core of this book therefore invite critical examination. This in no way discounts the possibility that some or all of them could not be miracles. Case 1.1 is adduced as one of the two cast-iron examples. The history was that of a chronic varicose ulcer that dried up overnight with a healthy skin covering apart from one corner which continued to exude pus. However, the author is only describing at second-hand something which occurred a month previously in his absence. The other

irrefutable case (10.4) is that of the restoration of hearing in a nine year old girl. Hearing can be restored suddenly and inexplicably. Furthermore, in the case described the patient improved on the day following adenoidectomy and myringotomy. Case 1.2 describes recovery from meningococcal septicaemia and meningitis. The bacteriological confirmation of the diagnosis is not given. Recovery can take place from confirmed meningococcal septicaemia. In addition, no mention is made of the nature or thoroughness of any antibiotic therapy that may have been given.

Case 2.1 is one of spontaneous recovery from fibrosing alveolitis following measles. The patient was treated with corticosteroids and Azathioprine. This condition is not always fatal and it is interesting that the patient appeared 'very slightly happier' five days after the healing service and two weeks later was definitely stronger. At two years three months, everything was well. Is this of necessity miraculous healing?

In Case 2.2 the story is that of sudden onset of unexplained blindness, possibly due to damage from malfunction of a photocopying machine, although other diagnoses such as basilar migraine were entertained. Vision returned suddenly and completely fifty days after it had been lost. Here again, there is no established diagnosis and sudden restoration of vision is recognized as something that does occur without any scientific explanation.

Dr. Gardner recounts the controversial report by Mr. R. Jameson from another journal (case 3.1) of a man who had bladder cancer and was treated with radiotherapy,

diathermy, local surgery and Methotrexate. After he had been to a healing service, the Christian surgeon was asked to review the findings before attempting further major surgery. He found no evidence of residual tumour but nevertheless deemed it necessary to perform an extremely radical pelvic clearance operation. It is almost impossible to derive any coherent conclusion from such a history. It is stated that the life-threatening cancer had been miraculously cured but not the complications. In contrast, the restoration of sight in case 2.2 was claimed to be more complete than formerly in that the patient no longer required spectacles.

Recovery from intra-abdominal haemorrhage due to a presumed rupture of spleen (case 4.1) is by no means unexpected, and need not necessarily be attributed to a divine intervention even if cooking oil had to be used for anointing.

Several of Gardner's case records are anecdotal and second or third hand. Case 5.1 is of a woman who had severe hip pain for three months following hysterectomy. She attended a meeting for spiritual renewal when during the service one of the speakers commented that there was someone present with trouble in the right hip. She was then healed and could cross her legs without discomfort. Dr. Gardner recognizes that we may think this 'a trivial case'. We do. (Not trivial to the woman—Ed.)

Case 6.2 demands particular mention because this is one of the few where the author is speaking from personal experience. The patient complained of abdominal pain following abdominal hysterectomy. She

became depressed and received psychiatric treatment. A lady at a house meeting had a vision that an 'internal tuck' was causing the problem. Dr. Gardner then operated and dealt with extensive abdominal adhesions. This case hardly fulfils the author's own criteria of miraculous healing.

The ultimate physical healing miracle, namely resurrection of the dead, is also described. One (Case 7.1) is a rehearsal of a description in 1963 from North Thailand where a dead woman began to speak after a lapse of ten minutes. No suggestion is made as to the nature of the illness. Similarly, one from the late seventies is quoted from a letter received from a missionary in Chile. Dr. Gardner concludes that the evidence of death in the latter case was 'better than in our Thailand case'. He then by inference states there is 'abundant contemporary evidence' that these miracles have continued since biblical times. He substantiates this with a reference to an incident in the sixth century Pictish mission of Columba which was written 'only a century after it happened'.

The chapter on 'God's Strange Work' is certainly strange. This refers to carious teeth being miraculously filled with silver filling. Sometimes this goes one better when the filling has the form of a silver cross set in each tooth, but the final accolade is reserved for children, where the filling has a golden cross.

Dr. Gardner starts his book by apparently adopting a critical stance and disarms potential objections to miraculous healing by acknowledging the need for rigorous examination of contemporary claims. However, as the book progresses it

becomes obvious that the author's position is that of a convinced and committed propagandist. He sees miraculous healing not as some special, rare, example of divine intervention but rather an essential component of the charismatic movement in general. He then uses the presence of the general phenomena to substantiate the occurrence of a particular one and vice versa. He gives completely uncritical approval to writers such as Francis McNutt as 'the doyen not only of writers but of workers in this field'. In fact, it is only because of such authorship that Dr. Gardner accepts some claims which otherwise would be 'too laughably ridiculous to warrant a moment's belief'. When he asks rhetorically that there are 'surely limits to our credulity', I would agree. The last semblance of critical impartiality is removed in the chapter on 'A New Pentecost'. Here, not only is Edward Irving and his followers stoutly defended but his critics are attacked. They are warned that they will have to do a lot of apologizing in heaven for their blindness to the dawn of God's new pentecost.

This is a book that is easy to read and the writer has a lively style. At times, he lapses into expressions that are hardly charismatic. We are told not to 'rubbish the Pharisees' or that something 'is a nonsense statement'.

This is a field where personal attitudes and prejudice colour our response. As a Christian doctor I read each new book on this subject hoping to find help in facing issues where scripture and day-to-day experience are sometimes difficult to reconcile. This is a book that did not help. The only exceptions were when the author quoted people like

Dr. Hugh Trowell and Dr. Martyn Lloyd Jones who, in fact, do not support his main thesis. It must be significant that this book begins cautiously and also ends with conclusions that are much more restrained than the bulk of the text. The conclusion is that only a small percentage of those for whom physical healing is sought from God, obtain it. No Christian could possibly quarrel with the statement that it is 'logical to pray about our health and that of our patients and our friends'. The rest of the book must be set in the context of a 100% mortality rate for every human being, where our final disease is uniformly fatal and where so much of cardiovascular, degenerative and neoplastic disease is not altered by scientific medicine. In the face of this immense load of pain, suffering and death it surely would be better to start with the premises of scripture rather than the anecdotes of history.

D. E. B. POWELL

Edwin Robertson, *The Shame and the Sacrifice*, Hodder and Stoughton, 1987. 288pp. Paperback. £7.95

Edwin Robertson has long been fascinated with Dietrich Bonhoeffer, having written an earlier biography (1966) among his many books. He is also an excellent translator, having edited and translated many of Bonhoeffer's works. In *The Shame and the Sacrifice*, he essays the difficult task of combining a life of the man with an analysis of his teaching. The approach has to be chronological to meet biographical needs, and comments on sermons, speeches and writings are slotted into the text at appropriate points.

The early part of the book, which includes an introductory 'Portrait of the man' by Wilfred Harrison (who interviewed many close associates of Bonhoeffer) concentrates effectively on major influences upon the growing Dietrich—his close family life, the fascination with death shared with his twin-sister Sabine, his patriotism and bitterness at the injustice and shame of the War Guilt clause of the Versailles Treaty (the first of a number of contacts with Niemöller) and his decision to read theology at Tübingen.

We become aware, thanks to the author's skilful writing, of Dietrich's growing authority, as he gains pastoral experience in Barcelona and New York, and of his revulsion against the philosophy of the National Socialist party. No doubt the personal element heightened his opposition to the NSDAP because his sister married the son of a Jew in 1926. His theological maturity was enhanced by the start of a lasting friendship with Barth, which yet embraced healthy disagreements on various theological points. His growing but 'critical commitment' toward the Ecumenical Movement is also perceptively dealt with. Though he put little faith in the various schemes for church union, he began to see that peace was possible only if the Churches of the world united in their efforts to avert war.

Robertson's detailed knowledge of available sources enables him time and again to illuminate important issues. For example, he shows through quotations how Bonhoeffer's encyclopaedic knowledge of Martin Luther enabled him to confound those 'German' Christians who would have segregated Jewish Christian

congregations. He chronicles with great skill the way in which Dietrich was gradually and inexorably forced to take a stand against Hitler, which would involve violence—a move from theological to political resistance. He goes into some detail on the training of ordinands for the Confessing (anti-Nazi) Church, and graphically brings out the disciplined life which Bonhoeffer maintained at his Finkelwalde seminary. There is perceptive analysis of 'The cost of discipleship', which contains the essence of his teaching at Finkelwalde, and of 'Life together', which describes the meaning of the Christian community there. At the same time, Robertson does not neglect the more personal aspects of Bonhoeffer's life. His love of music and fine piano playing are brought out, while his engagement and subsequent relationship with Maria von Wedemeyer are dealt with sensitively and in detail. Robertson respects Maria's desire to keep Dietrich's love-letters to herself, but regrets that they are not accessible to the public. Another trusting relationship and deep friendship, with Bishop George Bell of Chichester, is again well-handled.

The final stages of Bonhoeffer's life, from his arrest in April 1943 after Abwehr's subversion of Hitler's régime was exposed, to his death by hanging in April 1945 are dealt with in some 50 pages which contain memorable quotations and fine writing. For instance, Bonhoeffer justified his acceptance of assassination as the only solution to Hitler thus—'This free responsibility (for the Christian) depends on a God who demands responsible action in a bold venture of faith, and who promises forgiveness and consolation to the person

who becomes a sinner in that venture.' Again, the camp doctor, writing of Bonhoeffer's death ten years after the event, said 'I have hardly ever seen a man die so entirely submissive to the will of God.'

This is a fine book which effectively puts a detailed biography of Dietrich Bonhoeffer into the context of the wider history of his times. It should be read by all who wish to understand why a man voluntarily decided to return from the USA to Germany in July 1939 to share the trials and shame of Hitler's Germany, and ultimately to sacrifice his life as a Christian martyr.

W. A. HAYWOOD

Derek Williams, *Not Once But Twice*, Hodder & Stoughton, 1987. 189pp. Paperback. £1.95

To the majority of thirty-five year olds, cancer is something that they hope will never happen to them; for Tim Dean it was a disease that he had been healed of '*Not Once But Twice*'. The first five chapters of the book introduce us to Tim as a person, and we see him first as 'a sensitive kid who was easily upset'; and later a long-haired, bearded ex-art student who had just been offered a job with I.V.F. The discovery that he was suffering from Hodgkins disease, the subsequent treatment of the original disease and a recurrence are described in detail, including the dramatic shrinking of a lump on his neck following chemotherapy, which had coincided with a special prayer meeting being held on his behalf.

We then read of Tim's questioning the reasons for his disease, and coming to the conclusion that 'his

cancer (and all other such undeserved illnesses) might be somehow bound up with human sinfulness in general, without being tied to an individual's specific wrong-doing.' He later talks about suffering in general, equating his experience of illness with the suffering described in the New Testament (e.g. 1 Peter 4:19); an interpretation which some would question on the grounds that such verses refer to suffering experienced as a direct result of being a Christian. Tim also became convinced 'that the dichotomy driven between the prayer of faith and the labour of doctors was false,' a fact which the majority of those involved in the Healing Ministry of the Church would fervently echo. We are told that on two occasions Tim received the laying-on of hands with prayer for healing; it would be interesting to know why he did not receive this ministry on a more regular basis. The next ten years, including Tim's marriage to Margaret Garner, are covered in one chapter. We then read of the discovery that Tim had leukaemia (a result of the drugs he had received for Hodgkins Disease) and of the treatment he received. The book ends with a description of the Thanksgiving Service held when Tim had recovered from the leukaemia and the effects of the treatment. Tim's testimony is that he knows that 'Christ will be with me all the time.'

This is a very readable and at times very moving book, but I was sorry to see that the word 'healing' was used only in terms of physical healing and not as the deep physical, mental, emotional and spiritual healing that our Lord is ready to give us. I would also like to have seen a

deeper exploration of the possible reasons why Tim developed cancer.

JANICE ELSDON

M. L. Peterson, *Philosophy of Education—Issues and Options*, InterVarsity Press, 1986. 154pp. Paperback. £3.50

This book is one of the series entitled *Contours of Christian Philosophy*. Consisting of 'short introductory-level textbooks in the various fields of philosophy', the aim of each is to 'evaluate alternative viewpoints not only with regard to their general strength, but also with regard to their value in the construction of a Christian world and life view'. The book starts with an examination of the nature of the Philosophy of Education. From thence, its strategy consists of an examination of traditional and contemporary philosophies of education under the headings of 'Minds and Ideas', 'the Educative Process' and 'Evaluating ...'. The latter section includes a general evaluation and also one which is from a specifically Christian stance. Each of the philosophical positions is examined for its metaphysical, epistemological and axiological assumptions, and the views of representative writers are used as the bases for discussion. The latter half of the book is an exploration 'Toward a Christian Perspective on Education' and looks at issues in educational theory and practice.

The style of writing is lucid and the issues are carefully treated. There are numerous references to the American educational scene, but these in no way detract from the value of the book for British readers. Education policy and practice is

riddled with hidden values and a book like this is a useful introductory reader for students of education, teachers, policy makers and parents who want to explore a Christian perspective on education. It lays bare many of the presuppositions which have gained 'squatters' rights' and should help to facilitate intelligent examination and criticism of entrenched values within our own educational system.

I make the same complaint that applies to other books in this series and that is about the lack of a general index to topics in the book.

M. W. POOLE

J. S. Bell, *Speakable and unspeakable in quantum mechanics*, Cambridge University Press, 1987. 212pp. + xii. £25.

John Bell is famous for the inequality which expresses in a quantitative fashion the counter-intuitive non-locality (togetherness-in-separation) present in quantum theory. This property has received striking confirmation in a recent experiment by Alain Aspect and his collaborators. Bell has been one of the few contemporary theoretical physicists prepared to reflect seriously on the unresolved questions of the interpretation of quantum theory. In the volume under review he reprints twenty-two papers or talks which he has written over a period of more than twenty years. They are necessarily written at a variety of professional levels. Some are severely technical, such as the original paper on the Bell inequality. Others are accessible to any educated person prepared to take some trouble in reading them. Inevitably there is a

good deal of repetition in such a collection. Bell's style is perceptive and witty, generally very clear, though occasionally a little too allusive to offer instantly available meaning.

Copenhagen orthodoxy divided the world into a fitful quantum component and a reliable classical component. Actual measurement was the result of the latter impinging upon the former in an unbreakable embrace. Yet classical measuring instruments are made of quantum constituents, so that in the end such a duality will not do. However skilfully practitioners of quantum mechanics can use the theory, 'This awkward fact remains; the theory is only *approximately* unambiguous, only *approximately* selfconsistent'. Some reconciliation of the quantum and the classical is necessary to describe the one world of physical experience. Bell wants to achieve this by a reification of the elusive quantum world, so as to make it assimilable to the classical. He seeks a theory of 'beables' rather than observables, where 'The beables of a theory are those elements which might correspond to elements of reality, to things which exist'. He, therefore, inclines strongly to the de Broglie-Bohm 'pilot wave' interpretation, which is many times clearly presented in this sequence of papers. This seems to me to be unnecessarily close to identifying reality with objectivity.

Bell several times discusses Everett's many-world interpretation. He does so in his own way, which he acknowledges Everett would not be likely to endorse. For Bell the many-world theory is like the pilot wave without the trajectories. Thus he sees the theory as one in which the past is

replaced by present memory. He kills many-world quantum mechanics with kindness, describing it as 'radical solipsism'.

Anyone with a serious interest in quantum theory will want to read this book. He will also regret that its author has not used his profound understanding of the present state of the art to produce a connected analytical account of it. Were he to do so, we would be even more greatly in his debt.

JOHN POLKINGHORNE

Paul Helm (Ed), *Objective Knowledge—A Christian Perspective*, IVP, 1987. 192pp. Paperback. £10.95.

In 1941 C. S. Lewis wrote what can now be seen with hindsight as a prophetic paper entitled 'Bulverism, or The Foundation of Twentieth-Century Thought'. In it he sought to counter the growing tendency in some quarters to employ a form of argument which debunked (Bulverised) an opponent's intellectual position on the purported grounds that the so called 'reasons' advanced in support of that position had little, if anything, to do with objective reasoning. This sort of debunking might run like this: 'You only say that because you are a man' or 'You believe that because of your upbringing'. Accordingly, in his own inimitable way, Lewis exposes the fallacy of Bulverism by asking two simple questions: (i) Are all such thoughts tainted at the source or only some? (ii) Does the taint invalidate the thought in the sense of rendering it untrue? He points out that if all thoughts are tainted at the source then so are those who Bulverise.

What is more, if the taint does invalidate all such thoughts, it invalidates the thought that all thoughts are invalid! Thus the Bulverists saw off the branch on which they are smugly sitting.

Since that essay of over 45 years ago the Bulverizers have not been idle. In science they are represented by David Bloor and the proponents of the 'Edinburgh Strong Programme', in literature by the post-structuralists such as Jacques Derrida, in sociology by the feminist writer Dale Spender and in theology by the relativism of Denis Nineham. This present book is an attempt (and to my mind a wholly successful one) to explode the myth of 'Bulverism' whatever form it may take. Although the writers do not mention Lewis's seminal essay, the cutting logic it contains is employed at a number of points throughout this volume.

Paul Helm, who in addition to editing the final work and writing the introduction, argues a strong and compelling case for the desirability of objectivity in the pursuit of knowledge, makes the important distinction between ontological objectivity and epistemic objectivity. He advocates that the latter is an ideal to be pursued because it makes correction possible (which outright subjectivism does not), it allows the investigation to be surprized by facts, as well as providing some means for settling disagreements.

Two valuable essays come from the pen of the late Professor Donald Mackay whose death marks a great loss not only to this society in particular but to the Christian community in general. As ever, Professor Mackay combines that characteristic decisiveness of thought with clarity

of expression to attend the matters of objectivity as a Christian value and objectivity in science. With regards to the former, Professor Mackay shows that those who take seriously the belief in an all-knowing Creator cannot rationally dismiss objective, value-invariant knowledge (a much more precise term than 'value-free knowledge') as a myth. In fact, far from this being a myth to be dismissed, it is a God-given norm to be sought. Concerning objectivity in science, the case is made that the main-spring behind modern science's success is the ideal of objective, value-invariant knowledge. In this second paper, Professor Mackay helpfully demonstrates both the correct and incorrect application of the principle of economy (Occam's razor). Likewise a clear path is cut through the tangle that has arisen by a faulty apologetic's attempt to state the relation between 'Science' and 'Faith'. Both these papers are tightly argued and contain a wealth of valuable insight.

Professor Walter Thorson completes the section on science and objectivity by applying Polanyi's notion of 'Reasonable commitment' to scientific investigation. In fact we are treated to a remarkably clear exposition and application of Polanyi's epistemology together with a cautious critique.

Oliver Barclay tackles the much vexed question of 'Objectivity in Morality'. While maintaining that Christian theism provides morality with a 'metaphysical home' as well as an epistemologically coherent basis, Dr. Barclay nevertheless considers that apologetic potential is to be found in focusing upon the results of actions as a test of their moral valid-

ity. Thus 'good' actions are in part considered to be 'good' because of their beneficial value to society as a whole, and so the appropriateness of Christian moral values, which are God-given, can in part be substantiated by appealing to their beneficial effects. Now this is not to adopt a 'consequentialist' approach to ethics such that what 'good is' is determined by the consequences, rather it is to draw upon the intrinsic link between moral values and their effects in a way which is analagous to the link, say, between a good diet and healthy living. Indeed, this 'pragmatic' element in ethics is itself suggestive of objectivity in that there is something other than personal preference or intuition to which one can appeal to determine the nature of purported moral values and actions, namely their effects.

Two things need to be said about this positive and well argued essay. First of all it is questionable whether one can speak, as Dr. Barclay does, of 'defining moral values' without committing the 'genetic fallacy' and undermining the irreducibility of moral values. Secondly, the argument of the 'lesser evils' (p. 92) while having widespread support still leaves many Christians with a sense of unease for the simple reason that it carries with it the implication that within a fallen world such as ours, a person inevitably finds himself on occasions having to choose between two evils and to do so would involve a sin of some kind. The unease felt by the Christian arises not solely because of the implications it has for his own individual morality, but because of the implications it has for his Christology, for are we to believe that the inevitability of choice

between two evils was one which Christ had to face? If not then there must be an alternative available and this needs exploring.

In the area of theology, Professor Erik Fudge examines the objectivity of doctrinal statements taking the 1976 Doctrine report of the Church of England as a case study, while Dr. Joe Houston wrestles with the question of objectivity in the Gospels with special reference to the work of Denis Nineham. Fudge, (who occupies a chair in Linguistics at Hull) opts for a linguistic approach to his subject disentangling much of the confusion caused by the rather sloppy way words like 'faith', 'belief' and 'doctrine' are used in the report. By way of contrast Houston engages in a comparative historical study to dispel the contention of some that the Gospel writers, like other writers in the ancient world, were uninterested in facts about the past. A major plank in Dr. Houston's argument is that the non-factual history view, according to which the Gospels are but expressions of the Church's faith, provides no explanation of how that faith came about in the first place. The more reasonable explanation is that the events happened largely as the Gospels relate them.

Mark Ross takes us back to science and history to ask the question 'Who is telling the myth?' After examining the problem of tainted evidence, insufficient evidence and assessing evidence, he concludes that the case for anti-objectivity is far from being proven. Like Lewis before him, Dr. Ross points out that even if the anti-objectivist case were successful, paradoxically this would simultaneously mark its demise, for objective reasons would have been

adduced for thinking that objective knowledge was a myth.

The final essay by Dr. Shirley Dex entitled 'Objective facts in social science' is a model of critical reasoning and lucid argument. Although much of Dr. Dex's discussion is set within the specific context of sociological investigation, her arguments equally apply with considerable poignancy to any brand of 'Bulverism'. Indeed, Dr. Dex drives home the final nails in the anti-objectivist's coffin with considerable skill and firmness.

The seed of Lewis's essay finds its mature expression in this most valuable book. Christians have nothing to gain and so much to lose if they in any way capitulate to the widely canvassed view of the 'myth of objectivity'. Thankfully here is a group of Christians who have not only sounded the clarion call warning against such folly but have done much to restore confidence in the possibility and reality of objective knowledge.

MELVIN TINKER

John W. Wenham, *The Enigma of Evil. Can we Believe in the Goodness of God?*, IVP, 1985. 226pp. Paperback. £4.95.

Like the problem of evil itself, this book is not to be approached lightly. In its opening pages the author warns that easy answers cannot be provided to such complex difficulties.

Wenham's first task is to prove that those parts of Scripture which cause us most doubts about the goodness of God cannot be discarded; they constitute an entirely authentic part of Revelation. The validity of Old Testa-

ment teaching is affirmed by Christ, and all New Testament teaching emanates from Christ. The book thus remains Christocentric throughout, and it is in the person of Christ that God's kindness and God's severity find their perfect resolution, as is demonstrated in the closing chapter.

'What, then, of Hell?', the author asks, since it is a reality affirmed by Christ himself. Wenham gives a fair and balanced consideration of both the traditional orthodox position on the matter, and the notion of conditional immortality. Whilst erring toward the latter, he nonetheless urges those adhering to the former not to surrender it lightly.

After dealing, albeit cursorily, with the problem of Hell, and reaffirming the twin pillars of God's sovereignty and God's goodness as foundational to pure theism, he goes on to examine suffering in the realm of providence. If we can demonstrate the good purpose of suffering here, he contends that its presence in the Bible will present us with no problem. Whilst much of the argument in this part of the book might be more at home in a work of political philosophy than of mainline theology, it is nonetheless sound.

Turning now, specifically, to the Bible, he exposes the faults of some of the Saints, thereby demonstrating that we cannot deduce God's justice from their actions, but rather from the entire canon of Scripture. The Torah, in particular, is shown to be the work of a good and wise God. Even the destruction of the heathen was part of God's ultimate good purpose for mankind:

The chosen people was the precious casket in which was to be placed the Messiah of Israel and

the Saviour of Men. Against this people Satan directed his fiercest attacks, and to the preservation of this people in righteousness God directed his fiercest defence.

Following this masterly and thorough analysis of Old Testament history, the examination of the imprecatory Psalms is disappointing. Are they, as Wenham claims, an affirmation of God's goodness and a plea that His name be vindicated? If so, then they must indeed find their way back into the Church's worship today. Perhaps, however, it takes more than rational argument to make their vile curses palatable to our twentieth century sensibilities.

The closing affirmation that Christ, the suffering Messiah, is 'the God with whom we have to do' brings the book to its end. In Christ's death the often-inexplicable severity of God and the irresistible love of God find their resolution.

As an affirmation of theism the book has much to offer, but we should not expect from it a watertight solution to an insoluble enigma.

RICHARD J. LITTLEDALE

Frank E. Gaebelein (ed.), *The Expositor's Bible Commentary*, Vol. VI, Zondervan Publishing House, Michigan, 1986. 996pp. + xvi. £24.95.

This volume of the Expositor's Bible Commentary covers the work of the major prophets—Isaiah, Jeremiah, Lamentations and Ezekiel—and is based on the New International Version of the Bible. It seeks to be comprehensive from the standpoint of scholarly evangelical expositors, who are primarily concerned to provide for the needs of preachers,

teachers and students of the Bible. The scholarship aims at a high standard in that the writers endeavour to make use of the insights given from discoveries but are even more concerned to examine comparisons between the Septuagint and Hebrew versions. In fact, linguistic issues are given very considerable place in the study of these books.

The writers are naturally at pains to give the grounds for their own particular stance in theology, whilst, at the same time, they wish to give some place to the findings of scholars who do not share their viewpoint. Such treatment can be very uneven. Their criterion is normally the traditional evangelical one and the writers tend to justify this position throughout. This is seen most clearly, for example, in the introduction to the book of the prophet Isaiah. The case against unity is given a very summary treatment, whilst the case for its unity is provided in greater detail. This inevitably affects the treatment of the theology of the book, since there is a deep chasm between a book written by one writer and one that has come from two, three or more hands which have been involved in its writing. Similarly, in the treatment of the book of the prophet Ezekiel, the section on unity and authorship is given one page, which is hardly adequate to consider the problems which are related to the various visions and sections of this particular book.

In the exposition of the various books, much attention is given to the historical background. There is also an interesting awareness of the social concern which is evident among many evangelicals—this may

be seen in the passage which set forth the demands for social righteousness, although such attention is very limited as, for example, in the exposition of Isaiah 58, vv. 6–7; similarly, in the treatment of Jeremiah 34, vv. 8–22. In the treatment of Isaiah 3, vv. 1–8, the treatment is also sparse, with references to various other writers which could be made clearer. In the treatment of the history, great attention has been taken to provide adequate background, even though in places the writers deem passages to be prophecies which may in fact be a description of contemporary events. The matter-of-fact approach may well serve as a useful guide to the message of the prophet concerned but such a volume could have been enriched by a devotional basis for the expository preacher and teacher, who needs more than the historical accounts to give meat to their hearers. This volume displays a wealth of rich material, which will enable its readers to enter more fully into the message of the prophets, with particular reference to inflections and nuances of the Hebrew language. It is a very helpful tool whether it is placed in a library or on the shelves of a Bible student at home.

JOHN H. CHAMBERLAYNE

M. Buckley, S.J., *At the Origins of Modern Atheism*, Yale University Press, 1987. 445pp. + viii. £22.50.

Professor Buckley has written a book of outstanding significance. He has traced the origin of modern atheism from the form which Christian apologetics took in the seventeenth century in Europe. His thesis is that

Christian theologians from the seventeenth century onward deliberately chose to try to prove the existence of God by philosophical methods, entirely ignoring the witness of religious experience and the fact of Christ. The consequence was that their opponents, who first argued in favour of Deism and later of atheism, took the same line and eventually beat the theologians at their own game.

In a series of well-argued chapters he shows how the leading Catholic apologists in the seventeenth century, Lessius and Mersenne, deliberately attempted to prove the existence of God on philosophical, not religious grounds. Their approach was followed by that of Descartes and Newton. Descartes, arguing in favour of a universal mathematics, brought in God as the necessary link between mind and matter. Newton, thinking more in terms of mechanics, needed God both as an ultimate explanation for his whole system and in order to fill the gaps where mechanical explanations failed. Then Malebranche in France and Samuel Clarke in England followed essentially the same method, though with certain modifications. Thus the argument for the existence of God has practically been given over into the hands of the physicists. During the eighteenth century in France a whole series of philosophers countered this line of argument by simply substituting matter for God in the system, and claiming that matter, regarded as having a dynamism in itself, could offer a better explanation than could the God hypothesis. Of these Diderot was the pioneer, and d'Holbach with his *System of Nature*, was the culmination. In between came

others such as Condillac, Helvétius, and the pathetic Jean Meslier, who lived his entire life as a country curé, leaving a treatise on the necessity of atheism as his legacy when he died.

Having carefully articulated this century-long debate, Buckley briefly glances at the sequel. Kant concentrated attention on epistemology and more hopefully looked for assurance of the existence of God in the moral consciousness. Then in the sphere of theology Schleiermacher drew all his arguments from man's religious consciousness. Buckley obviously believes that this was a much more promising line, and he is able to show that the atheistic argument, as manifested in Feuerbach, Marx, and Freud, adapted itself to this new approach. This is a fresh indication that atheism is always parasitic on theism. Buckley himself gives some suggestion of the direction in which he believes theology should go today. He does not eschew an encounter with science, but he believes that the witness of religious experience and the fact of Christ should be central in the argument for the existence of God. Perhaps Marcel and Karl Rahner would be his guides.

This is an excellent book, one which anyone should read who is concerned about the question of Christianity's relation to current philosophical and scientific thought. The reader should be warned though that when Buckley writes 'logistic' he means 'logical'. And on p. 117, in a very Cantabrian context he refers to George Berkeley as 'fellow and lecturer of Trinity College'. He should have written 'Trinity College, Dublin'.

ANTHONY HANSON

William Law, *A Serious Call to a Devout and Holy Life*, edited by Halcyon Backhouse for Hodder & Stoughton, 1987. Paperback. £2.95.

Hodder and Stoughton have a series of Christian Classics which seek to make 'Spiritual Classics' available to a wider audience through careful editing and modernization. This edition has good-sized print, a short introduction and notes. What impressed me was the care of the editing, so that familiar passages kept their phrasing and the dated sections were simplified without loss of meaning. It is not the same as reading 'Law', but brings the essential message and much of the style to an apparently growing number who wish to rediscover the strengths of eighteenth century piety, and the spiritual depth of our Christian forebears. The book is to be recommended, even if the original text is preferred.

IAN SMITH

Jean Watson (ed.), *Through the Year with J. I. Packer*, Hodder & Stoughton, 1986. Paperback. £7.95.

The great surprise is that Packer works in small doses. You either get on with daily reading books or not; I find that I read on to the next day, and don't get enough of them to satisfy. Packer is a concise writer who has been saying good things for years; in this format we realize how good it is. Full marks to Jean Watson for her editorship. She does not convince me with her headings (the whole book is aimed at the family) but that is not so important. These portions contain plenty to think through without the rather banal sug-

gestions at the foot of them. At 2.4 pence a day it is expensive, but if you want a thoughtful and rewarding daily devotional with more meat than usual this is the one. One sad point; although the source of the daily passage is given at the end of the book, there are no page references—only the book/article title.

IAN SMITH

Oliver Barclay (ed.), *Science and Christian Belief*, UCCF Associates, Leicester, undated. 76pp. £1.50.

There is no longer what was once called a conflict between science and religion. Many scientists (and theologians, too) feel that the relation of science to religion need not be the ideological warfare of the past few centuries, but could be more like the constructive relationship of science to medicine. Nevertheless complex issues do arise from time to time both in the interactions between religious thought and new scientific knowledge of man and nature and when new ethical decisions are required. And science is always on the move. New theories are continually being advanced to replace existing ones which can no longer be reconciled with the experimental evidence. Facts are always to be welcomed, but problems arise when facts are misinterpreted, or theories are built on too limited a foundation.

This paperback includes some papers presented to various conferences of the Research Scientists' Christian Fellowship in recent years. The papers, summaries of papers and extracts included are intended to stimulate further thought. The contributors include Sir Robert Boyd,

Professors R. Hooykaas and C. Russell, Dr. D. Tyrell and the late Professor D. M. Mackay.

This compilation provides at once a useful 'browse through' many of the main topics and questions that have occupied the Research Scientists' Christian Fellowship of late and demonstrates the need for communication between all those who have an interest in the relationship between science and religion.

A. B. CALDER

Rupert Sheldrake, *A New Science of Life: the Hypothesis of Formative Causation*, Paladin, 1987. 287pp. Paperback. £3.95.

At first reading, the phrase 'formative causation' may seem to be in a class with tautologies such as the 'dormative principle' which makes hedgehogs hibernate in winter. However, those who are familiar with the first edition of 1981 will be aware that this is not the case. That edition aroused considerable interest and indeed antipathy in some quarters, and this edition includes some of the comments and controversies provoked by the earlier edition.

The hypothesis of formative causation is an attempt to deal with the perennial problem of why events in the physical world happen as they do. In addition to the energetic constraints known to physical science, a further type of causation is said to be responsible for the organization of matter—from sub-atomic particles, through atoms, molecules, crystals, cells and organs, to complete organisms.

This *formative causation* depends on some kind of organizing 'field' called a *morphogenetic field*, associ-

ated with the end-product of the organization, be it inorganic or organic. Although such fields are associated with energy minima and thus with processes which are thermodynamically spontaneous, the field itself is not a physical entity, such as a magnetic or gravitational field, and must be inferred from observation: it cannot be detected directly.

The morphogenetic field influences the organization of matter by *morphic resonance*: similar past systems act through space and time in such a way as to make it easier for subsequent similar systems to form. For example, when chemists synthesize a new compound, crystallization is sometimes hard to induce, but later attempts meet with a more ready success, even over great distances, when minute seed crystals in the atmosphere may not yet have had time to diffuse to such distant locations. Rats seem able to learn a new trick more easily if other, similar rats elsewhere have already done so.

The author applies his ideas to chemical structures, biological systems, and even to instinct, learning, and the evolution of animal behaviour. At the end of the book it is argued that the hypothesis is compatible with a modified form of materialism (which assumes the primacy of matter); it also sheds light on the interaction between the conscious self and matter. Alternatively, the 'wholeness' of organisms at all levels of complexity could be seen as 'a reflection of the transcendental unity on which they depended ...' and so be consistent with a non-materialist interpretation of the universe.

It would be easy to write off the book as non-science or pseudo-science, as was done by the Editor of *Nature* in a scathing attack on the first edition in 1981. However, there is more to be said. The author is a respected biochemist; one-time Fellow of Clare College, Cambridge and now a Consultant Plant Physiologist to the International Crops Research Institute for the Semi-Arid Tropics, at Hyderabad.

The essential thrust of the book is that reductionist materialism is not likely to solve fundamental problems of biology, particularly human behaviour, in spite of such successes as the cracking of the genetic code. At every level of organization, the whole seems to be more than the sum of its parts. Although 'vitalist' ('something extra' is needed) theories have been proposed from time to time, none has been able to make testable predictions. The author offers several such predictions, and indeed summarizes the results of some tests of perception and of memory, which could be used to support the hypothesis. Although these may be less than convincing, the book serves as a reminder to keep our options open: there remains yet a mystery or two about the fascinating universe in which we find ourselves.

There is a comprehensive list of references, an index of names and another of subjects.

D. A. BURGESS

John White and Ken Blue, *Healing the Wounded: the costly love of church discipline*, IVP, 1985. 238pp. £2.50.

Here and there, this book by White

and Blue made me see red! The reasons for this are various but, at heart, I suspect that the subject of their book, church discipline, is one with which I have difficulty—both conceptually and in practice. However, *Healing the Wounded* (a title that needs the subtitle 'the costly love of church discipline' to explain its application) is, for me, a helpful corrective in an area of biblical teaching which has been a minefield of dispute and excessive application throughout church history. Periods of inquisitorial zeal have alternated with times of laxity and laziness in the face of the Enemy's inroads into church life.

Although John White, the well known author, and Ken Blue bring psychiatric and theological reflection respectively to their subject, their book is essentially, and appropriately, *pastoral* in tone. The focus is on *corrective* church discipline, described as 'church discipline's distasteful side'. Using a range of 'case studies' and the exposition of key scriptures, they bravely tackle such issues as 'barriers to church discipline', questions of reconciliation and 'restoring the fallen', and the problems related to 'sins that don't go away', the confession of sin and 'when leaders go wrong'.

An understanding of Matthew 18:15–22 is rightly given a central place (pp. 87ff.) and the authors, following John Yoder, indicate that 'binding' and 'loosing' mean, in turn, 'withholding fellowship' and 'forgiving'. At the same time, the need for the churches' sensitivity to the Spirit and the avoidance of a 'rigid authoritarianism' are stressed. (Incidentally, Yoder's appendix on 'Binding and Loosing' is a masterpiece of brevity

and perception, offering excellent discussion starters.)

The difficult phrase, 'deliver this man to Satan for the destruction of the flesh' in 1 Corinthians 5:3-5 is also handled with discernment and the remedial potential of separation from Christian fellowship is indicated with compassion: 'Cold is never so cold as when you begin to recall the fires of home' (p. 106).

Many of the everyday problems of the churches' 'body-life' are dealt with head on. I found, for example, the sections on gossip and 'church bosses' particularly valuable. The various reasons for gossip are mentioned, including 'malice', a 'sense of power' and the fear of confrontation (pp. 116-7). The latter is looked at sympathetically, in situations where we spill the beans because we 'yearn for support, for someone who will see our side'. The question of 'church bosses' is considered with similar perceptiveness. Those powerful individuals who seem to rule-the-roost in many local churches, undermining church leaders and dividing fellow-believers, need to be given short shrift. They 'must be spotted and rescued early, or they may never be rescued at all' (p. 198).

On analysis, most of the niggles I had with *Healing the Wounded* were on matters of emphasis. I felt, overall, there was a tendency to 'major' on the more overt sins, such as adultery, drunkenness and gambling, and to play down those sins that came under our Lord's greatest condemnation: hypocrisy, judgmentalism, deceit, timeserving (see, for example, p. 100). I wonder, too, whether the section on 'personality clashes' (pp. 121-3) is not over-

simplified, though the authors acknowledge that the distinctions between irritation due to personal quirks, cultural differences and individual sin 'are not always clear'. Once or twice the word 'homosexuality' is used in a way that suggests that the authors condemn the condition itself rather than singling out its genital expression (e.g., p. 173, where the 'habitual sins' of '... sexual promiscuity, child molestation, homosexuality, child abuse ...' are listed).

Church discipline is a difficult and unpopular matter to write about (let alone practise!) and I am grateful to John White and Ken Blue for their book. Hopefully, I have learnt a little more about my own blind-spots through 'seeing red' here and there. Though somewhat repetitive, and therefore overlong, it is a courageous book which, because of the dynamite of its subject, needs careful reading if one is to avoid the simple reinforcement of prejudice (either towards a *laissez-faire* approach to church discipline or towards an enthusiasm for rooting out sin that can become hard-nosed and pharisaical). The need for that circumspection is no criticism of the authors, but simply of our human tendency to either play safe or ride roughshod over other people's sensibilities.

ROGER F. HURDING

Frank Whaling (ed.), *Religion in Today's World*, T. & T. Clark, Edinburgh, 1987. 383pp. Hardback. £14.95.

The value of inter-disciplinary studies to cover a wide spectrum of subjects is increasingly recognized

as necessary, particularly in the case of cultural studies which have to embrace broad fields. In our multi-faith society, whilst the study of a specific religion and a particular doctrine (e.g. the concept of God) are useful, there is need for the wider consideration of inter-faith developments and for other concepts. This book is an attempt to look, in breadth and depth, at the religious situation of the world as a whole in the latter part of the twentieth century.

Such an endeavour is a very ambitious one but Frank Whaling has brought together eleven experts from ten different universities across the world to focus on five major religious traditions—Buddhist, Christian, Hindu, Jewish and Muslim, whilst attention is also given to the present religious situations in China and Japan. In seeking to provide as wide a spectrum as possible, a chapter is given to Civil Religion and to Cults of which there have been a great increase in recent times. Two other themes of considerable importance also find a place—Secular World-Views and Spirituality. The former covers a very large field, which include various types of Marxism, nationalism and scientific humanism, blending with and rivaling, the traditional religions. The chapter on spirituality provides a useful survey which embraces the scientific and spiritual spheres in a framework of continuity. The Primal Religious Traditions which are close to the natural order have their place within a global consciousness.

Such an enormous canvas has its strengths as well as its weaknesses. An enterprise that seeks to give a global view provides a fascinating

picture of movements which are taking place within various religious traditions. It provides insights into the international links between religious groups, which embrace political and economic concerns. There are inevitably broad strokes of the brush in dealing with many fields.

This may be seen, for example, in the chapter on Buddhist Tradition, in which the writer (Donald Swearer) has to face the prospect of an enormous amount of material, from which he has to select significant fields. He chooses four of them, namely, the syncretic and magical nature of popular Buddhism; Buddhism and politics in the nation state; the impact of the modern West and the development of Buddhism in Europe and America. Similarly, Ninian Smart in his chapter on 'Secularist World Views' has a very large number of disparate elements, which are not easily integrated although his masterly treatment of the subject matter is evident.

The essay on the religious situation in China (by Tu Wei-Ming) is impressionistic but impressive in its account of religious revival there. The writer discusses the complex challenge to Chinese intellectuals and the relationship of Communist ideology to Confucian ideals. His concentration on the importance of the intellectual elite gives little place to the situation of the ordinary Chinese believer, for whom the ancient faiths will, no doubt, still provide a powerful challenge.

It is hoped that this book will serve as a pioneering venture, a seminal work which will ring bells 'to set other wits to work' on the significance of religion in the life and

work of people in the world today. As a broad canvas, it certainly opens many doors or vistas, which can receive closer attention in more specific studies in regions and areas, as the closing chapter on 'The Study of Religion in Today's World' indicates. It opens the way for 'a wider pooling of humane knowledge around the globe'.

JOHN H. CHAMBERLAYNE

Stephen E. Lammers and Allen Verhey (eds.), *On Moral Medicine. Theological Perspectives in Medical Ethics*, William B. Eerdmans, 1987. 657pp. Paperback. £20.45.

More than six hundred pages on medical ethics and scarcely anything new among them! But there is no need for novelty here. This book brings together essays written over many years by many different authors. The majority of these write from a Christian viewpoint but there are also Jewish and humanist contributions. It is an anthology of the cream of the numerous publications on the thorny issues that arise from today's medicine. It allows us to become well informed in a relatively painless manner.

There are three parts: the first consists of very general essays on 'Perspectives on Religion and Medicine'. The Second Part covers a range of important 'Concepts in Religion and Medicine'. These include Life, Health, Death, Suffering, Personhood and Man's mastery of Nature. The third part (which is the second half of the book) then applies these principles to more specific medical-ethical problems such as abortion, artificial reproduction, genetic engineering, euthanasia, the

handicapped newborn, psychiatric care, research on both humans and animals and finally ends with an excellent section on the vexed question of the right utilization of scarce resources.

Each chapter consists of a brief introduction followed by four or more essays outlining key concepts and viewpoints. These essays are taken from numerous sources. The majority were first published in the 1970s but some are later and several date from classical times. They range from the profundity of Barth and Thielicke to the occasional light-hearted touch, such as the poem on the philosophical implications of having a new plastic ear ossicle. Many of the contributions are weighty and closely argued so that this is not bed-time reading, but the non-specialist will find many earth-based and understandable pieces.

My chief criticism, writing as a doctor rather than a theologian, is that there is no key or introduction to the various writers, who are mostly philosophers or theologians. This may have been deliberate on the part of the editors, so that each contribution could be judged on its merits, or they may have assumed their authors all to be too well-known to need introduction. A little background information on an author gives an indication of his likely 'baggage' and aids the assessment of his or her viewpoint.

The essays (105 in all) are well-chosen and well-referenced so that the book provides a comprehensive contribution and a way into the literature on any topic of medical-ethical interest. It is therefore a very valuable source book for all those, whether students, teachers or practi-

tioners, who have an interest in this field. Considering its size and weight (both physical and philosophical) it is very good value for money.

CAROLINE BERRY

Charles Elliott, *Comfortable Compassion? Poverty, Power and the Church*, Hodder & Stoughton, 1987. 194pp. Paperback. £6.95.

As you might expect from the title, this is not a comfortable read—especially if you are a Christian committed to supporting the work done by Christian development agencies.

In the past, Charles Elliott has been, among other things, a Professor of Development Studies, the director of Christian Aid, and a member of staff of the World Council of Churches, and he draws on this very considerable experience in this country and in many other countries in writing this book. He acknowledges that it is not 'a simple detached account', but prefers to describe it as 'a plea for a fresh look, a radical reinterpretation, a new start'.

The book begins with an historical analysis of the Church's involvement in issues of development and poverty in the so-called Third World, from the colonial period to the present day. It looks particularly at the ways in which the churches have moved from the unashamedly missionary activities of colonial times into the development activities of the times when most former colonies were gaining their independence. It studies the ways in which the churches have been influenced by such thinking on development as modernization, structuralism, consci-

entization and dependency. The author looks at the way notions of justice raised by structuralists affect two particular groups which have been denied justice all over the world—blacks and women—as an introduction to a discussion on the structural position of the poor.

Dr. Elliott analyses the motives, the theoretical bases and the practice of both the donor churches and governments and those of the recipients. As he describes the historical process of the Church's coming to grips with world poverty, he acknowledges that the picture is confused and complicated. Christian groups, like other groups, look at issues of world poverty in many different ways and are motivated by many different visions, but he is sure that the majority of the Church's development agencies put a considerable amount of energy and finance into emergency programmes and most of their resources into modernization activities, rather than structural, justice or power-type programmes. He argues that this is not good enough, because the basic problems of poverty and injustice are not changed by this approach. 'The Churches have over-invested in approaches to development that are not necessarily destructive or unnecessary, but which are inadequate by themselves and which are very easily subverted into counter-signs.'

In the last three chapters of the book, Dr. Elliott looks at what it would mean to put the poor and powerless at the centre of the churches' work in the spirit of the Magnificat and the Beatitudes, accepting that this is 'Metanoia. Conversion. Revolution. Gospel'. These

chapters are perhaps the most obviously theological of the book. I found the twelve pages on power and powers in the Bible very helpful, but, as with other sections of the book, would have welcomed some unpacking of the thoughts and assumptions being made. In this section, as elsewhere, it felt as though I was reading shorthand and I wanted the longhand. I shall certainly want to reread slowly such sections of the book. It is in this part of the book that Dr. Elliott grapples with a variety of possible alternative responses to those predominantly chosen by the churches so far and of which he has been so critical. He does not offer simple, straightforward, easy solutions and some will find this frustrating. But he does suggest possible ways forward, avenues of approach. He argues that individuals as well as groups have a role to play and that individuals have a two-way journey—inward into themselves as well as outward into the world and that these are both part of the whole. He also suggests criteria for both individuals and groups to use in assessing the ways in which they confront structures of injustice. He gives four examples of groups which have confronted such structures and which meet his criteria.

Dr. Elliott is at pains to stress that he is not denying the value of much emergency relief work and project assistance, such as that operated by both secular and church-related agencies. He does, however, argue that the Christian response to the processes of impoverishment, oppression and dehumanization at work in the world has to be more than this. 'For to continue to act as

though the poverty of nearly a billion people can be eliminated by aided projects is to fail to take seriously both the nature of the problem and the nature of the world.' What is also needed is an agenda which he calls 'alternative consciousness', which 'engages with the world at the level from which permanent change must come'. His challenge to the reader is to accept the challenge of Christ. 'Each has to find his or her way. That takes time, effort, imagination, discipline and perseverance. It is work. And it brings pain.' But he ends by also saying it is a dance—a dance with Christ which it is good to join in.

This is a disturbing book and a challenging book, but it is also an exciting and hopeful book. It is worth reading and rereading.

BRIDGET REES

C. E. Hummell, *The Galileo Connection: Resolving conflicts between Science and the Bible*, IVP (USA), 1986. 293pp. Paperback. \$8.95.

There are three parts to this book. Each is eminently readable, yet deeply researched. It is a masterly introduction to the Bible and Science discussion. The subject matter is set in its historical perspective, and this is an exciting and attractive feature of the book. At the end, there are reference notes on authors, and a subject index.

Part 1 deals with the life and work of Copernicus, Kepler, Galileo and Newton: as the title suggests, it is the trial and persecution of Galileo which figures largely. The author dispenses with the myth of Galileo *versus* the Church, and Christianity's age-old antagonism with Science. He shows that there were many factions

in the Church, some for and some against the new spirit of scientific enquiry. Likewise, in the universities, the support for Galileo was fragmentary. The author reveals that it was the somewhat abrupt character of Galileo which had much to do with the marshalling of opposition to his scientific discoveries. At the same time, behind the various parties, is seen the struggle for power and authority. All of the above scientists were Christians, but they were not prepared to compromise the scientific truths which they had discovered. The author shows that all four (particularly Galileo) emphasized their desire to keep separate the scientific truth, discovered from the wonderful works of God in his creation, and the religious truth of man's predicament conveyed by the Biblical narrative. The author enlarges on this theme in his book.

In Part 2 there is a discussion of the relationship of the Bible to miracles and scientific laws, and in Part 3, Hummel brings a critical but fair-minded approach to the relatively-recent controversy between evolution and creationism. The whole book is clear and lucid, and one is wiser after reading it.

B. W. COOK

Richard Bennet, *Howell Harris and the dawn of revival* (translated from the Welsh by Comer M. Roberts), Evangelical Press of Wales, 1987. 210pp. Paperback. £3.95.

The Evangelical Press of Wales, well-known in its own South Wales area, is now making national claims to recognition. This book, with an introduction by Dr. Martyn Lloyd-Jones, will enhance the reputations of

both publisher and author. The paperback is well-produced, has a good bibliography and index, and speaks with relevance to today's world. It is not a biography of Howell Harris. Rather, it concentrates 'on the working of God's spirit in Harris in his formative years', and especially between 1735 and 1738. The diaries of Harris are used to give a detailed and authentic account of his conversion; many today will be interested in that experience.

As an intimate friend of George Whitefield and of John and Charles Wesley, Howell Harris met with similar problems in his attempt to bring about a Welsh Revival. So his life and labours to 1738 are really the story of the beginning of the Methodist movement in Wales. With Daniel Rowland, Howell Davies and William Williams (the hymnologist of the movement) Harris was responsible for the setting up of the Association which was to lead into the Calvinistic Methodist Church of Wales.

On the national scene, he was essentially a peacemaker, trying to keep Whitefield and the Wesleys together. He had a 'vision of an evangelical movement comprising not only the conflicting Methodists, but also the Moravians and others who adhere to the evangelical faith'. The effort failed, but certainly Howell Harris was one of the greatest Welshmen of the eighteenth century. This book gives a real flavour of that period, and of Harris' own spiritual pilgrimage.

W. A. HAYWOOD

M. David Enoch, *Healing the Hurt Mind*, Hodder & Stoughton, 1987. 190pp. £6.95.

This is a book which all professional and non-professional Christian carers of the mentally ill should read. It ought to be read by even those who have no immediate interest in the subject in the hope that it will do something to banish the widespread fear and also the stigma attached to the illness.

The first part, *THE HURT MIND*, is a description of all the forms mental illness may take, from clinical depression to paranoid schizophrenia, and the appropriate treatment for them. At no time does David Enoch speak of the emotionally destructive burden carried by informal carers of those suffering from severe mental illness. He writes of the Belsen like old psychiatric hospitals which at least gave security for the mentally ill within a caring community but not of the frequently awful bed and breakfast or hostel accommodation many of them occupy today. Many of those who have been discharged from 'the Belsen like hospitals' become tramps, sleeping rough, or corpses in the river. David Enoch explains the wonderful change which came about in the 1950s with the discovery of the neuroleptic drugs which stabilized great numbers of the mentally ill and permitted them to live almost normal lives in the community.

Part two deals with the talking cures, behaviour therapy and psychotherapy. These talking cures, particularly if they are one to one are very expensive in terms of time and money because they tend to be long term. Following on from these therapies Enoch brings out the many psychiatric principles which correspond to the teaching of Jesus. He stresses that there is nearly always a

participating onlooker who is usually the informal carer. This is true but there are many psychiatrists unaware of the existence of such a person and treat him with something less than respect.

In his last section entitled 'WONDERFUL COUNSELLOR' he writes of the resources to the Christian psychiatrist and his colleagues, the informal carer and the pastoral worker ... Prayer ... Scripture ... the Church ... but above all Jesus and the Holy Spirit who must always remain at the centre. It is difficult to understand how the disordered mind which is frequently met in severe mental illness, unable to think logically or even in sequence, can respond to Christian pastoral care and be cured but the participating onlooker, the third person, can and does respond and it is this response which makes the unbearable bearable for him. It is perhaps the most important part for the psychiatrist to read and note for what happens during the course of the illness depends largely on his handling of the patient and the participating onlooker (the informal carer).

At the end of the book David Enoch writes: Surely this is the only complete healing that can occur: Christian counselling under the guidance of the Holy Spirit alone can achieve it, but achieve it, it can. This is a large claim to make when so many psychiatrists and patients are not Christian. It is also hard to reconcile it with the fact that rural communities in India seem better able to handle mental illness than the urban societies of the west. If the above claim were true there could only be despair for the patient treated by a non-Christian psychiatrist. The

Christian will undoubtedly answer this comment by saying that the Holy Spirit can even work through those who neither know him or believe in him.

This is a non-technical book but some technical terms have to be used and so it is fortunate that there is a good glossary explaining them.

Appendix A is an Initial Assessment when Pastoral workers first meet the mentally ill. It is very comprehensive and if the patient is able to give all the answers one has a very full history of him from which an informed assessment may be made.

Appendix B lists the basic principles of Christian Counselling.

LESLIE CAMPION

Caroline Berry, *The Rites of Life*, Hodder & Stoughton, 1987. 207pp. Paperback. £7.95.

The progress of modern technology has forced many issues into our consciousness. Not least is this true of medical technology, especially in the areas of birth and death. Decisions have to be made every day by medical practitioners about abortion at one end of life, and life-support machines at the other. These matters are left to those most able to make decisions, the doctors themselves, albeit with the full knowledge of the family involved. However, technology is moving ahead so fast, it often seems that the means by which we can control our lives are outstripping our moral judgements. Are there any principles which we can apply generally, or is it always to be a pragmatic decision which is made? This is a very relevant area for Christians who, above all, see human

beings as made in the image of God, and for immortality.

Dr. Berry has spent 12 years as a consultant medical geneticist in a London hospital, and no-one is more qualified to express opinions than she. When a Christian who is active in the field, knows all the agonies, and has to counsel families in decision-making writes about medical ethics, we take notice. *The Rites of Life* draws on such experience, but it gives no easy answers, because there are none; we are often faced with a choice between two paths, neither of which is unequivocally right or wrong. Dr. Berry takes us through the mystery of life from conception to death, and beyond. She also looks wider, at the increasing cost of medical services, and at the problem of the whole world. The book is closely interwoven with a strand of Biblical theology—so much so that it would be impossible to separate it out. This gives the book a coherence and a purpose. No difficult issues are fudged; they are squarely-faced, though not resolved, because in this life we have to live with tensions. This seems to be the way God has made His creation, and we must live as responsible stewards.

The message of this book is that Christians must take an interest and a practical part in decision-making, as far as it is possible to do so. Strong strands in the work are those of the relationship of the person to God, to each other, particularly within the family. The book is easy to read, and all terms are clearly explained in language free of jargon. Each chapter has a bibliography, and there is a general index. One moral issue which could figure in a future edition

would be that of sex-linked diseases, for example AIDS.

A. B. ROBINS

G. G. Simpson, *Fossils and the History of Life*, W. H. Freeman and Co., 1984. 239pp. Hardback. £10.95.

G. G. Simpson, now in his eighties, is a world authority on palaeontology. This book was written shortly after his retirement from active research in 1982, and could be aptly nicknamed 'fossils without tears'. Although fossils have been investigated for some centuries, it was only in the 17th century that the suggestion was seriously considered that they might be of organic, or animal, origin. The book traces the history of the science from that time, through the Darwinian revolution to the present day. The bibliography references extend, in fact, to 1980.

The author divides his treatise into eight chapters, taking the reader from the roots of the science, through the relationship between fossils and time, geographical location, and so on, to end with a chapter entitled 'Fossils and People'. Why do people collect fossils? What do they mean for us? The author suggests that palaeontology helps us to understand our world and ourselves. We

are intrigued by origins, even if the time scales they reveal are hard to comprehend, and even threatening for some. For readers of this journal, it will be relevant to quote the author's views on evolution and the ever-current debate over creationism. Simpson, of course, comes down firmly in the evolutionist camp, elevating the 'theory' to a 'fact'. However, his personal viewpoint allows of the possibility of *theistic* evolution, claiming that 'there is no necessary conflict between religion and science'.

The book is supplied with many diagrams, some in colour, and charts. It is the sort of production which one has come to expect from the publishers of 'Scientific American'. There is a very useful guide to further reading, most of the books being published in the USA, and an excellent index. I imagine that this book would serve as a very handy introduction to the subject, to give to anyone interested in fossils. The authorship gives one confidence in its accuracy and balance. The book is easy to read, in a chatty style, but by no means the worse for that. It is also free of jargon, as far as is possible given the nature of the subject.

A. B. ROBINS

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